

A

TREATISE

ON THE

Edw D Seal
Operations of SURGERY,

WITH A

Description and Representation

OF THE

INSTRUMENTS

Used in Performing them:

To which is Prefix'd an

INTRODUCTION

ON THE

Nature and Treatment of WOUNDS,
ABSCESSSES and ULCERS.

By *SAMUEL SHARP,*

Surgeon to *Guy's Hospital.*

The FOURTH EDITION.

L O N D O N,

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M DCC XLIII.





T O

WILLIAM CHESELDEN, *Esq;*
Surgeon to *Chelsea-Hospital*.

S I R,



S I am chiefly indebted to the Advantage of an Education under You, for whatever Knowledge I can pretend to in Surgery, I could not in the least hesitate to whom I should dedicate this Treatise, though

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was

DEDICATION.

was it my Misfortune to be a
Stranger to your Person, that
Merit which has made the
World so long esteem You
the Ornament of our Profes-
sion, would alone have in-
duced me to shew You this
Mark of my Respect, which
I hope will not be unaccep-
table from,

S I R,

Your most obedient

humble Servant,

S. SHARP.



P R E F A C E.



AS the Methods of operating in Surgery have of late Years been exceedingly improved in *England*, and there is no Treatise of Character on that Subject written in our Language, I believe there is no great occasion to apologize for this Undertaking: It is true we have a few Translations from the Writings of Foreigners, but besides that they are unacquainted with these Improvements, their manner of describing an Operation is so very minute, and in general so little pleasing, that could ~~nothing~~ ^{nothing} new be added, or nothing false exploded, the

P R E F A C E.

Possibility of only doing it more concisely and agreeably would be a reasonable Inducement to the Attempt.

IN the Description of Diseases I have only mention'd their distinguishing Appearances, and have not once dared to guess at that particular Disorder in the Animal Oeconomy, which is the immediate Cause of them; indeed the Uncertainty there is in Conjectures of this intricate Nature, and the little Service that can accrue to Surgery from such speculative Enquiries, have entirely deterred me from all Pretence to this sort of Theory; and since the most ingenious Men hitherto, have not, by the help of *Hypotheses*, done any considerable Service to the Practice of Surgery, nay, for the most part have misled young Surgeons from the Study of the Symptoms and Cure of Diseases, to an idle turn of Reasoning, and a certain Stile in Conversation,

P R E F A C E.

versation, which has very much discredited the Art amongst Men of Sense; I hope I am right in my Silence on that Head.

IT has been very much my Endeavour to make this Treatise short, and therefore I have given no Histories of Cases, but where the uncommonness of the Doctrine made it proper to illustrate it with Fact, and these I have recited in the most concise manner I was able: On this account too, I think I have not attempted to explode any Practice which is already in disrepute, and if it appears otherwise to Men of Skill here in *London*, I beg they will refer to those Books of Surgery which are now the best esteem'd in *Europe*, and to which I have almost always had an Eye in the Criticisms I have made on the generality of Opinions.

IT is usual with most Writers to describe at length the several Bandages

P R E F A C E.

proper to be employed after each Operation; but as the manner of applying them can hardly be learnt from a Description only, or if it could, there is so little to be said on that Subject, but what must be copied from others, that I have forbore to follow the Example; though to say the Truth, the Purpose of Bandage being chiefly to maintain the due Situation of a Dressing, or to make a Compress on particular Parts, Surgeons always turn a Roller with those Views as their Discretion and Dexterity guide them, without any Regard to the exact Rules laid down in these Descriptions, which are almost impossible to be retain'd in the Memory without a continual Practice of them, and therefore we see are not much attended to.

IN the first Edition of this Treatise, I asserted (*p.* 99.) that the Hæmorrhage, which sometimes ensues in the

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P R E F A C E.

Lateral Operation, had been esteemed an Objection of so great Weight, as to have occasion'd its being suppress'd in the Hospitals of *France* by a Royal Edict: I have since been inform'd I was mistaken in that Particular, and that it had only been forbid in the *Charité* by Monsieur *Marechal*, the King's first Surgeon, who had the Inspection of the Practice of Surgery in that Hospital: what were his Motives for not suffering this Method to be continued there after having been perform'd a whole Season, I will not take upon me to determine.



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INTRODUCTION.

C H A P. I.

Of W O U N D S.



O conceive rightly of the Nature and Treatment of Wounds, under the variety of Disorders they are subject to, it will be proper first to learn what are the Appearances in the Progress of Healing a large Wound, when it is made with a sharp Instrument, and the Constitution is pure.

IN this Circumstance the Blood-Vessels, immediately upon their Division, bleed freely; and continue bleeding till they are either stopp'd by Art, or at length contracting and withdrawing themselves into the Wound, their Extremities are shut up by the coagulated Blood. The Hæ-

in about twenty-four Hours, is a thin ferous Discharge, and a Day or two after, an Increase of it, tho' somewhat thickened, and stinking. In this State it continues two or three Days without any great Alteration, and from that time the Matter grows thicker and less offensive, and when the Bottom of the Wound fills up with little Granulations of Flesh, it diminishes in its Quantity, and continues doing so 'till the Wound is quite skinn'd over.

THE first Stage of Healing, or the Discharge of Matter, is by Surgeons call'd *Digestion*; the Second, or the filling-up with Flesh, *Incarnation*; and the last, or skinning-over, *Cicatrizat-ion*. These are the Technical Terms chiefly in use, and are fully sufficient to describe the State of Wounds, without the farther Subdivisions usually found in Books.

IT is worth observing, that the Loss of any particular Part of the Body can only be repair'd by the Fluids of that distinct Part; and as in a broken Bone the *Callus* is generated from the Ends of the Fracture, so in a Wound is the *Cicatrix* from the Circumference of the Skin only: Hence arises the Necessity of keeping the Surface even, either by Pressure or Eating-Medicines, that the Eminence of the Flesh may not resist the Fibres of the Skin in their Tendency

to cover the Wound. This Eminence is compos'd of little Points or Granulations call'd *Fungus*, or proud Flesh, and is frequently esteem'd an Evil, though in truth this Species of it is the constant Attendant on healing Wounds; for when they are smooth, and have no Disposition to shoot out above their Lips, there is a Slackness to heal, and a Cure is very difficultly effected: Since then a *Fungus* prevents healing only by its Luxuriancy, and all Wounds cicatrise from their Circumference, there will be no occasion to destroy the whole *Fungus* every time it rises, but only the Edges of it near the Lips of the Skin, which may be done by gentle Escharoticks, such as Lint dipt in a mild Solution of *Vitriol*, or for the most part only by dry Lint, and a tight Bandage, which will reduce it sufficiently to a Level, if apply'd before the *Fungus* has acquir'd too much Growth. In large Wounds, the Application of corrosive Medicines to the whole Surface is of no use, because the *Fungus* will attain but to a certain height when left to itself, which it will be frequently rising up to though it be often wasted; and as all the Advantage to be gathered from it is only from the Evenness of its Margin, the Purpose will be as fully answer'd by keeping that under only, and an infinite deal of Pain

INTRODUCTION.

avoided from the continual Repetition of Escharoticks.

WHEN I speak of the Necessity of a Wound being repair'd by the same Fluids of which the Part was before compos'd, I mean upon the Supposition that the Renewal be of the same Substance with the Part injur'd; as Callus is of Bone, and a Cicatrix is of Skin; for a Vacuity is generally filled up with one Species only of Flesh, though it possess the Space, in which were included before the Wound was made, the distinct separate Substances of *Membrana Adiposa*, *Membrana Musculorum*, and *the Muscle itself*; and even if we scratch or perforate a Bone, there are certain wounded Vessels in it that push out Flesh which becomes the Covering of it; and after Fractures of the Skull, when the Surface of the Brain is hurt, and part of the Membranes, and Bones remov'd, the whole Cavity is fill'd up by nearly the same uniform Substance, till it arrives even with the Skin, which spreads over it to complete the Cure.

ON this account it is that after the healing of Wounds, from the Surface of the Bone, the Cicatrix is adherent to it, and no absolute Distinction of Parts preserv'd; though if a Wound be made of any Magnitude, the Adherence, after healing, will not be so wide as the Wound

INTRODUCTION.

Wound itself was, but only of the Extent of the Cicatrix, which is always much smaller than the Incision, because Healing does not consist only in the forming of new Matter, but also in the Elongation of the Fibres of the circumjacent Skin and Flesh towards the Center of the Wound; which will cover it in more or less time, and in greater or less Quantity in proportion to their Laxness; for the Scar does not begin to form till they resist any farther Extension; hence arises the Advantage in Amputations of saving a great deal of Skin.

FROM what has been said of the Progress of a Wound made by a sharp Instrument, where there is no Indisposition of Body, we see the Cure is perform'd without any Interruption but from the *Fungus*; so that the Business of Surgery will consist principally in a proper Regard to that Point, and in Applications that will the least interfere with the ordinary course of Nature, which in these Cases will be such as act the least upon the Surface of the Wound; and agreeable to this we find, that dry Lint only is generally the best Remedy through the whole course of Dressing; at first it stops the Blood with less Injury than any styptick Powders or Waters, and afterwards by absorbing

the Matter, which in the beginning of Suppuration is thin and acrimonious, it becomes in effect a Digestive: During Incarnation it is the softest Medium that can be apply'd between the Roller and tender Granulations, and at the same time is an easy Compress upon the sprouting *Fungus*.

O V E R the dry Lint may be applied a Pledgit of some soft Ointment spread upon Tow, which must be renewed every Day, and preserv'd in its Situation by a gentle Bandage; though in all large Wounds, the first Dressing after that of the Accident or Operation, should not be applied in less than three Days, when, the Matter being form'd, the Lint separates more easily from the Part; in the Removal of which no Force should be us'd, but only so much be taken away as is loose, and comes off without Pain.

P E R H A P S it may appear surprizing that I do not recommend either digestive or incarnative Ointments, which have had such Reputation formerly for their Efficacy in all Species of Wounds; but as the Intent of Medicines is to reduce the Wound to a natural State, or a Propensity to heal, which is what I have already suppos'd it to be in; the End of such Applications is not wanted, and in other respects dry

Lint

Lint is more advantageous, as may be learnt from what I have said of its Benefits. There are certainly abundance of Cases in which different Applications will have their several Uses, but these are when Wounds are attended with a variety of Circumstances not supposed in that I have been speaking of; though even when these, by the virtue of Medicines, are reduced to as kind a State, the Method of treating them afterwards should be the same, as will be better understood by the next Chapter, in which I shall treat more particularly of the Dressing of Wounds.



C H A P. II.

Of Inflammations and Abscesses.

AS almost all Abscesses are the Consequences of Inflammations, and these produce a variety of Events, as they are differently complicated with other Disorders, it will be proper first to make some Inquiry into their Disposition. Inflammations from all Causes have three ways of terminating, either by Dispersion, Suppuration, or Gangrene; a Schirrus after an Inflammation of a Gland is always mentioned as a

fourth, but I think with Impropriety, since it seldom or never occurs, but in venereal, scrophulous, or cancerous Cases, and then it is the Forerunner, and not the Consequence of an Inflammation, the Tumour generally appearing some time before the Discolouration.

B U T though every kind of Inflammation will sometimes terminate in different Shapes, yet a probable Conjecture of the Event may be always gathered from the State of the Patient's Health. Thus Inflammations happening in a slight degree upon Colds, and without any foregoing Indisposition, will most likely be dispers'd; those which follow close upon a Fever, or happen to a very gross Habit of Body, will generally imposthume; and those which fall upon very old People, or Dropical Constitutions, will have a strong Tendency to gangrene.

I F the State of an Inflammation be such as to make the Dispersion of it safely practicable, that End will be best brought about by Evacuations, such as plentiful Bleeding and repeated Purges; the Part itself must be treated with Fomentations twice a Day; and if the Skin be very tense, it may be embrocated with a Mixture of three Fourths of Oil of Roses, and one Fourth of common Vinegar, and afterwards be covered with *Unguent. Flor. Samb.* or a soft
Ointment

Ointment made of white Wax and Sweet Oil, spread upon a fine Rag, and roll'd on gently. I know almost all Surgeons are averse to the Application of any thing unctuous to an inflam'd Skin, upon the supposition of its obstructing the Pores, and by that means preventing the Transpiration of the obstructed Fluids, which is imagin'd to be one of the ways that an Inflammation is remov'd; but whether this Reasoning is founded on Practice or Theory only, I am not clear; though I think it very certain that Inflammations left to themselves often grow stiff and painful, and are to be eased by any Medicine that makes them more soft and pliable; which does not look as though relaxing Medicines interrupted the Disposition to a Cure: However, to preserve some sort of Medium, in Inflammations of the Face, where they are esteem'd most dangerous, it may be made a Rule to use nothing more oily than warm Milk, with which the Face may be embrocated five or six times a Day. If after four or five Days the Inflammation begins to subside, the Purging-Waters and Manna may take place of other Purges, and the Embrocation of Oil and Vinegar be now omitted, or sooner if it has begun to excoriate. The Ointment of Wax and Oil may be continued to the last, or if upon conclusion of the Cure

I N T R O D U C T I O N.

Cure the itching of the Skin should be troublesome, it may be better relieved by the Application of Nutritum, which is an Ointment made of equal Parts of Diachylon and sweet Oil, melted softly down, and afterwards stirr'd together with a little addition of Vinegar till they are cold. During the Cure a thin Diet is absolutely necessary, and in the height of the Inflammation the drinking of thin Liquors is of great service.

HERE I have suppos'd that the Inflammation had so great a tendency to discuss, as by the help of proper Assistance to terminate in that manner, but when it happens that the Disposition of the Tumour resists all discutient means, we must then desist from any farther Evacuations, and as much as we can, assist Nature in the bringing on a Suppuration.

THAT Matter will most likely be form'd we may judge from the Increase of the symptomatick Fever, and Enlargement of the Tumour with more Pain and Pulsation; and if a small Rigor comes on, it is hardly to be doubted: Inflammations after a Fever, and the Small-Pox, almost always suppurate, but these presently discover their Tendency, or at least should be at first gently treated, as tho' we expected an Imposthumation. It is a Maxim laid down in Surgery

gery that Evacuations are pernicious in every Circumstance of a Disease that is at last to end in Suppuration: But as Physicians do now acknowledge that bleeding on certain Occasions in the Small-Pox is not only no Impediment to the Maturation, but even promotes it, so in the Formation of Abscesses, when the Vessels have been clogg'd, and the Suppuration has not kindly advanc'd, bleeding has sometimes quicken'd it exceedingly, but however this Practice is to be follow'd with Caution. Purges are, no doubt, improper at this time, yet if the Patient be costive, he must be assisted with gentle Clysters every two or three Days.

O F all the Applications invented to promote Suppuration, there are none so easy as Pultices, but as there are particular Tumours very slow of Suppuration, and almost void of Pain, such for Instance, as some of the Scrophulous Swellings, it will be less troublesome in such Cases to wear the Gum-Plaisters, which may be renew'd every four or five Days only. Amongst the suppurative Pultices, perhaps there is none preferable to that made of Bread and Milk softened with Oil, at least the Advantage of any other over it, is not to be distinguished in Practice. The Use of suppurative Plaisters in hasty Abscesses, or Inflammations in a weak or dropical
Habit

Habit of Body, is by no means advisable, as they are apt to fit uneasy on the Inflammation, are often painful to remove when we enquire into the State of the Tumour, and by their Compress in bad Constitutions add something to the Disposition of the Part to mortify. The Abscess may be cover'd with the Pultice twice a-day, till it be come to that Ripeness as to require opening, which will be known by the Thinness and Eminence of the Skin in some part of it, a Fluctuation of the Matter, and generally speaking an Abatement of the Pain previous to these Appearances. The Manner of opening an Abscess I shall describe, after having spoke of a Gangrene, which is the other Consequence of an Inflammation.

THE Signs of a Gangrene are these: the Inflammation loses its Redness, and becomes dusky and livid, the Tenseness of the Skin goes off, and feels to the Touch flabby or emphysematous, Vesications fill'd with Ichor or different Colours spread all over it; the Tumour subsides, and from a dusky Complexion, turns black; the Pulse quickens and sinks, and profuse Sweats coming on, at last grow cold, and the Patient dies.

To stop the Progress of a Mortification, the Method of Treatment will be nearly the same,
from

from whatever Cause it proceeds, except in that arising from Cold; in which Case we ought to be cautious not to apply Warmth too suddenly to the Part, if it be true that in the Northern Countries they have daily Conviction of Gangrenes produced by this means, which might have been easily prevented by avoiding Heat; nay, they carry their Apprehension of the danger of sudden Warmth so far, as to cover the Part with Snow first, which they say seldom fails to obviate any ill Consequence; but I am inclin'd to think there is a Mixture of Prejudice in this Proceeding.

THE Practice of scarifying Gangrenes, by several Incisions down to the quick, is almost universal, and, I think, with Reason, since it not only sets the Parts free, and discharges a pernicious Ichor, but makes way for whatever Efficacy there may be in topical Applications. These are different with different Surgeons, but I believe the Digestives softened with Oil of Turpentine are as good Dressings as any for the Scarifications; and upon them all over the Part may be laid the *Tberiaca Londinensis*, which should be also us'd in the beginnning of a Gangrene before the necessity of scarifying. There are some who insist upon having had particular Success in the stopping of Gangrenes, from the Use

Use of the Grounds of strong Beer mix'd up with Bread or Oatmeal, but there are hardly any Facts less proper to infer from than the Ceasing of a Mortification, since we see amongst the Poor that are brought into the Hospitals, how often it happens without any Assistance; however, it is certain Service may be done by spirituous Fomentations, and the Dressings above-mention'd, which are to be repeated twice a-day: Medicines also given internally are beneficial, and these should consist of the Cordial kind, tho' at present the Bark is order'd by a great many Surgeons as the sovereign Remedy for this Disorder: After the Separation of the Eschar, the Wound becomes a common Ulcer, and must be treated as such.

THERE are two ways of opening an Abscess, either by Incision or Caustick, but Incision is preferable in most Cases; in small Abscesses there is seldom a Necessity for greater Dilatation than what is procur'd by opening the Length of them with a Point of a Lancet; and in large ones, where there is not a great quantity of Skin discolour'd and become thin, an Incision to their utmost Extent, will usually answer the Purpose, or if there be much thin discoloured Skin, a circular or oval Piece of it must be cut away; which Operation, if done dexterously with a
Knife,

Knife, is much less painful than by Caustick, and at once lays open a great Space of the Abscess, which may be dress'd down to the bottom, and the Matter of it be freely discharged, whereas after a Caustick, tho' we make Incisions through the Eschar, as is the usual Practice, yet the Matter will be under some Confinement, and we cannot have the Advantage of dressing properly till the Separation of the Slough, which often requires a considerable time, so that the Cure must be necessarily delay'd; besides that the Pain of Burning continuing two or three Hours, which a Caustick usually takes up in doing its Office, draws such a Fluxion upon the Skin round the Eschar as sometimes to indispose it very much for healing afterwards. In the Use of Causticks it is but too much a Practice to lay a small one on the most prominent Part of a large Tumour, which not giving sufficient Vent to the Matter, and perhaps the Orifice soon after growing narrow, leads on to the Necessity of employing Tents, which two Circumstances more frequently make Fistulas after an Abscess, than any Malignity in the Nature of the Abscess itself. The Event would more certainly be the same of a small Incision, but I observe, that Surgeons not depending so much on small Openings by Incision, as by Caustick,

stick, do, when they use the Knife, generally dilate sufficiently; whereas in the other way a little Opening in the most depending Part of the Tumour usually satisfies them; but as the Method of making small Orifices for great Discharges is for the most part tedious of Cure, very often requiring Dilatation at last, and now and then pernicious in the Consequence above-mention'd, and even making the adjacent Bones carious, I thought it might not be useless to caution against this Practice.

THE indiscriminate Application of Causticks to all Abscesses, often runs into the same Mischiefs of Tedioufness in the Cure, from a Cause exactly the reverse of that I have been describing; for as in great Swellings they are seldom laid on large enough, and the Matter continues draining for want of a sufficient Opening, so in small ones they make a greater Opening than is necessary, and therefore demand a greater length of time to repair the Wound. I confess the Disposition of Abscesses to fill up, after the Discharge of Matter, is so very different, that some few large ones do well after the mere Puncture of a Lancet, if the Orifice be made in a depending Part, and a proper Bandage can be applied; though if ever we trust to such an Opening, it should be in Abscesses about the

Face,

Face, where we should be more careful to avoid the Deformity of a Scar than in any other Part, and where also the Method will be more likely to succeed, from their Situation, it being a Maxim in Surgery, that Abscesses and Ulcers will have a greater or less Tendency to heal, as they are higher or lower in the Body; however in Abscesses of the Face, if the Skin be very thin; it will be always safer to open the length of it, than trust to a Puncture only.

FROM this Account of the Method of opening Abscesses, it does not appear often necessary to apply Causticks, yet they have their Advantages in some respects, and are seldom so terrible to Patients as the Knife, though they are generally more painful to bear; they are of most use in Cases where the Skin is thin and inflam'd, and we have reason to think the Malignity of the Abscess is of that nature as to prevent a Quickness of Incarning, in which Circumstance, if an Incision only was made through the Skin, little Sinus's would often form, and burrow underneath, and the Lips of it lying loose and flabby would become callous, and retard the Cure, though the malignity of the Wound was corrected: Of this kind are Venereal Buboës, which though they often do well by mere Incision, yet when the Skin is

in the State I have suppos'd, the Caustick is always preferable, as I have had many Opportunities of being convinced. It is to be observed I confine this Method to Venereal Buboës, for those which follow a Fever or the Small-Pox for the most part cure by Incision only. There are many scrophulous Tumours, where the Reasoning is the same as in the Venereal; and even in great Swellings where I have recommended Incision, if the Patient will not submit to cutting, and the Surgeon is apprehensive of any danger in wounding a large Vessel, which is often done with the Knife, (though it may readily be tied up with a Needle and Ligature yet as this Inconvenience is avoided by Causticks it may on such an occasion be made use of but I think after the Eschar is made, it should be cut almost all away, which will be no Pain to the Patient, and will give a much freer Discharge to the Matter than Incisions made through it: However in scrophulous Swellings of the Neck and Face, unless they are very large, Causticks are not adviseable, since in that part of the Body, with length of time, they heal after Incision. Causticks are of great Service in destroying stubborn scrophulous Indurations of the Glands, also venereal Indurations of the Glands of the Groin, which will neither discuss nor

suppurate; likewise in exposing carious Bones, and making large Issues. The best Caustick in use is *Lapis infernalis* powdered and mix'd into a Paste with Sope, which is to be prevented from spreading, by cutting an Orifice in a piece of sticking Plaister, nearly as big as you mean to make the Eschar, which being applied to the Part, the Caustick must be laid on the Orifice and preserved in its Situation, by a few Slips of Plaister laid round its Edges, and a large Piece over the whole. When Issues are made, or Bones expos'd, the Eschar should be cut out immediately, or the next Day, for if we wait the Separation, we miscarry in our Design of making a deep Opening, since Sloughs are flung off by the sprouting new Flesh underneath, which fills up the Cavity at the same time that it discharges the Eschar, so that we are obliged afterwards to make the Cavity a second time with painful escharotick Medicines. To make an Issue, or lay a Bone bare, this Caustick may lie on about four Hours; to destroy a large Gland five or six, and to open Abscesses an Hour and a half, two Hours, or three Hours according to the Thickness of the Skin; and what is very remarkable, notwithstanding its Strength and sudden Efficacy, it frequently gives no Pain where the Skin is not inflamed,

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as in making Issues and opening some few Abscesses.

HITHERTO I have supposed the Surgeon has had the Opportunity of opening the Tumour at the most eligible Time, that is when the Skin is thin, and the Fluctuation of the Matter very sensible, which is always to be waited for, notwithstanding it is very much taught, to open critical Abscesses before they come to an exact Suppuration, in order to give Vent sooner to the noxious Matter of the Disease; but in opening before this Period they miss the very Design they aim at, since but little Matter is deposited in the Abscess before it arrives towards its Ripeness, and besides, the Ulcer afterwards grows foul, and is less dispos'd to heal.

WHEN an Abscess is already burst, we are to be guided by the Probe where to dilate, observing the same Rules with regard to the degree of Dilatation, as in the other Case; the usual Method of opening farther is with the Probe-Scissars, and indeed in all Abscesses the generality of Surgeons use the Scissars, after having first made a Puncture with a Lancet, but as the Knife operates much quicker, and with less violence to the Parts, than Scissars, which squeeze at the same time that they wound, 'twill be sparing the Patient a great deal of Pain to use

the Knife, wherever it is practicable, which is in almost all Cases, except some *Fistula's in Ano*, where the Scissars are more convenient. The manner of opening with a Knife is by sliding it on a Director, the Groove of which prevents its being misguided. If the Orifice of the Abscess be so small as not to admit the Director, or the Blade of the Scissars, it must be enlarged by a piece of Sponge-Tent, which is made by dipping a dry bit of Sponge in melted Wax, and immediately squeezing as much out of it again as possible, between two pieces of Tyle or Marble; the Effect of which is, that the loose Sponge being compressed into a small Compass, when any of it is introduced into an Abscess, the Heat of the Part melts down the remaining Wax that holds it together, and the Sponge sucking up the Moisture of the Abscess expands, and in expanding opens the Orifice wider, and by degrees, so as to give very little Pain.

THE usual Method of dressing an Abscess, the first time, is with dry Lint only, or if there be no Flux of Blood, with soft Digestives spread on Lint. If there be no danger of the upper Part of the Wound reuniting too soon, the Dressings must be laid in loose, but if the Abscess be deep, and the Wound narrow, as is the Case sometimes of Abscesses in *Ano*, the

Lint must be cramm'd in pretty tight, that we may have afterwards the Advantage of dressing down to the bottom without the use of Tents which are almost universally decry'd in these Days, though they still continue to be employ'd too much by the very People, who would seem to explode them most, so difficult is it to be convinc'd of the true Efficacy of Nature in the healing of Wounds. Formerly the Virtues of Tents have been much insisted on as it was then thought absolutely necessary to keep Wounds open a considerable time to give Vent to the imaginary Poison of the Constitution; it was suppos'd too, that they were beneficial in conveying the proper suppurative or fæcotic Medicines down to the bottom of the Abscess, and again, that by absorbing the Matter they preserved the Cleanliness of the Wound and dispos'd it to heal. But this Reasoning is not now esteem'd of any Force; Surgeons at present know a Wound cannot heal too fast provided it heal firm from the bottom; they are very well satisfied also from what they see in Wounds, where no Medicines are apply'd, that Nature of herself shoots forth new Flesh, and is interrupted by any Pressure whatsoever; besides, as to the Conceit of Tents sucking up the Matter, which is esteem'd noxious to healing

they are so far from being beneficial in the Performance of it, that they are of great Prejudice; for if the Matter be offensive in its Nature, though they do absorb it, they bring it into Contact with every Part of the Sinus, and if it be prejudicial by its Quantity they do Mischief in locking it up in the Abscess, and preventing the Discharge it would find if the Dressings were only superficial; but in fact, Matter when it is good, is of no Disservice to Wounds with regard to its Quality, and Surgeons should therefore be less curious in wiping them clean, when they are tender and painful. That Tents are Impediments to healing rather than Assistants, we may learn from considering the effect of a Pea in an Issue, which by Pressure keeps open the Wound just as Tents do, and if there are Instances of Wounds healing very well notwithstanding the use of Tents, so there are also of Issues healing up, in spite of any Measures we can take to keep a Pea in its Cavity. In short Tents in Wounds by resisting the growth of the little Granulations of Flesh, in process of time harden them, and in that manner produce a Fistula, so that instead of being us'd for the Cure of an Abscess, they never should be employed but where we mean to retard the healing of the external Wound, ex-

cept in some little narrow Abscesses, where if they be not cramm'd in too large, they become as Dossils, admitting of Incarnation at the bottom; but care should be taken not to insinuate them much deeper than the Skin in this Case, and that they should be repeated twice a-day to give Vent to the Matter they confine. Sometimes they are of service in large Abscesses, particularly of the Breast, where the Matter cannot discharge itself by the Orifice already made, and yet does not point sufficiently to any other Part for an Opening, though it makes Signs whether it would tend, if it was a little confin'd. In such an Instance a Tent plugging up the Orifice, would make the Matter recur to the Part dispos'd to receive it, and mark the Place for a Counter-opening: But Tents do most good in little deep Abscesses, whence any extraneous Body is to be evacuated, such as small Splinters of Bone, &c.

THE Use of Vulnerary Injections into Abscesses bears so near a Resemblance to the Use of Tents, that if the one Method is prejudicial, the other must be so likewise. It has been said in their favour, that in deep Abscesses where no Ointment can be applied, they digest, cleanse, and correct the Malignity of the Pus; but they do so much mischief by frequently

quently distending the Parts of the Abscess, and in a manner macerating the new Flesh generated within them, that they are hardly proper in any Case; though one of the great Mischiefs of Injections and Tents both, has been a mistaken Faith amongst Practitioners, that wherever their Medicines were applied the Part would heal; and upon that Presumption they have neglected to dilate Abscesses, which have not only remain'd incurable after this Treatment, but would often have done so for want of a Discharge, if they had been dress'd more superficially.

In dressing Wounds it is common to apply the Medicines warm, or hot, upon the Supposition that heated Ointments have a stronger Power of digesting than cold; but as any Medicine will soon arrive to the Heat of the Part it is laid on, whether it be apply'd hot or cold, the Efficacy of the Heat can avail but little in so small a time; and as Dossils dipt in hot Ointments are not cleanly, and even grow stiff and painful, I think it rather preferable to apply them cold, or perhaps in Winter a little warm'd before the Fire after they are spread; observing, if the Ulcer be uneven, to make the Dossils small in order to lie close. Over the Dossils of Lint may be laid a large Pledgit of Tow spread with

with Basilicon, which will lie softer than a defensive Plaster, for this, though invented to defend the Circumference of Wounds against Inflammation or a Fluxion of Humours, is often the very Cause of them, so that the Dressings of large Wounds should never be kept on by these Plaisters where there is danger of such Accidents; and 'tis on the account of the Unfitness of Plaisters of any kind for an Inflammation, that I have omitted to mention any of them as proper Discutients in that Disorder. In this manner the Dressings may be continued, till the Cavity is incarned, and then it may be cicatrised with dry Lint, or some of the cicatrising Ointments, observing to keep the *Fungus* down as directed before: If the Drying-Ointment be the *Cerat. de Lapid. Calam.* the Stone must be levigated before it is put into it, otherwise the Ointment will be corrosive.

IN the course of Dressing it will be proper to have regard to the Situation of the Abscess, and as much as possible to make the Patient favour the Discharge by his ordinary Posture; and to this end also, as what is of greater Importance than the Virtue of any Ointment the Discharge must be assisted by Compress and Bandage; the Compress may be made of Rags or
Plaster,

Plaister, tho' the latter is sometimes preferable, as it remains immoveable on the Part it is applied to. The frequency of Dressing will depend on the Quantity of Discharge; once in twenty four Hours is ordinarily sufficient; but sometimes twice, or perhaps three times is necessary. I have before mention'd not to be too scrupulously nice in cleaning a Wound; but it is worth remarking, that a Sore should never be wiped by drawing a piece of Tow or Rag over it, but only by dabbing it with fine Lint, which is a much easier Method for the Patient; the Parts about it may be wiped clean in a rougher manner without any Prejudice. I do not think the Air has that ill effect on Sores as is generally conceiv'd; nor would the large Abscesses on Beasts, which are often expos'd to the Air the whole time of Cure, do well, if it was so very pernicious as is represented; but as it tends to the making a Scab, and in Winter is a little painful to the new Flesh, it will be right to finish the Dressing as quick as may be without hurrying. Another Caution necessary in the Treatment of Abscesses, is, That Surgeons should not upon all occasions search into their Cavities with the Finger or Probe, as it often tears them open and indisposes them for a Cure.

C H A P.



C H A P. III.

Of U L C E R S.

WHEN a Wound or Abscess degenerates into so bad a State as to resist the Methods of Cure I have hitherto laid down, and loses that Complexion which belongs to a healing Wound, it is called an Ulcer, and as the Name is generally borrow'd from the ill Habit of the Sore, it is a Custom to apply it to all Sores that have any degree of Malignity, tho' they are immediately form'd without any previous Abscess or Wound; such are the Venereal Ulcers of the Tonfils, &c.

U L C E R S are distinguished by their particular Disorders, though it seldom happens that the Affections are not complicated; and when we lay down Rules for the Management of one Species of Ulcer, it is generally requisite to apply them to almost all others. However the Characters of most eminence are, the callous Ulcer, the sinuous Ulcer, and the Ulcer with Caries of the adjacent Bone; tho' there are abundance more known to Surgeons, such as the Putrid, the

the Corrosive, the Varicous, &c. but as they have all acquired their Names from some particular Affection, I shall speak of the Treatment of them under the general Head of Ulcers.

IT will be often in vain to pursue the best means of Cure by Topical Application, unless we are assisted by internal Remedies; for as many Ulcers are the Effects of a particular Indisposition of Body, it will be difficult to bring them into order, while the Cause of them remains with any Violence; though they are sometimes in a great degree the Discharge of the Indisposition itself, as in the Plague, Small-pox, &c. But we see it generally necessary in the Pox, the Scurvy, Obstructions of the Menfes, Dropsies, and many other Distempers, to give Internals of great Efficacy; and indeed there are hardly any Constitutions where Ulcers are not assisted by some Physical Regimen. Those that are cancerous and scrophulous seem to gain the least Advantage from Physick, for if in their Beginnings they have sometimes been very much relieved, or cured by Salivation, or any other Evacuation, they are often irritated, and made worse by them; so that there is nothing very certain in the Effects of violent Medicines in these Distempers. I have seen also
great

great Quantities of Alteratives tried on a variety of Subjects, but I cannot say with extraordinary Success: Upon the whole, I think in both these Cases, the Milk-Diet and gentle Purgings with Manna, and the Waters seem to be most efficacious; though brisk Methods may be used with more Safety in the Evil, than the Cancer. As to the Internal Remedies in the other Disorders, they are to be learnt in most Physical Treatises.

WHEN an Ulcer becomes foul, and discharges a nasty thin Ichor, the Edges of it, in process of time, tuck in, and growing skinn'd and hard, give it the Name of a callous Ulcer, which, so long as the Edges continue in that State, must necessarily be prevented from healing: But we are not immediately to destroy the Lips of it in expectation of a sudden Cure, for while the Malignity of the Ulcer remains, which was the occasion of the Callosity, so long will the new Lips be subject to a Relapse of the same kind, however often the external Surface of them be destroy'd; so that when we have to deal with this Circumstance, we are to endeavour to bring the Body of the Ulcer into a Disposition to recover by other Methods. It sometimes happens to poor laborious People, who have not been able to afford themselves
Rest,

Rest, that lying a-bed will in a short time give a Diversion to the Humours of the Part, and the callous Edges softening, will without any great Assistance shoot out a Cicatrix, when the Ulcer is grown clean and fill'd with good Flesh. The Effect of a Salivation is generally the same; and even an Issue does sometimes dispose a neighbouring Ulcer to heal: But though Callosities are often softened by these Means, yet when the Surface of the Ulcer begins to yield thick Matter, and little Granulations of red Flesh shoot up, it will be proper to quicken Nature by destroying the Edges of it, if they remain hard. The manner of doing this is by touching them a few Days with the Lunar Caustick, or *Lapis infernalis*, and some choose to cut them off with a Knife; but this last Method is very painful, and not, as I can perceive, more efficacious; tho' when the Lips do not tuck down close to the Ulcer, but hang loose over it, as in some Venereal Buboës where the Matter lies a great way under the Edges of the Skin, the easiest Method is cutting them off with the Scissars.

To digest the Ulcer, or to procure good Matter from it when in a putrid State, there are an Infinity of Ointments invented; but the *Basilicon flavum* alone, or soften'd down sometimes with Turpentine, and sometimes mixt
up

up with different Proportions of red Precipitate, seems to serve the Purposes of bringing an Ulcer on to Cicatrification as well as any of the others. When the Ulcer is incarn'd, the Cure may be finish'd as in other Wounds, or if it does not cicatrise kindly, it may be wash'd with *Aq. Calcis*, or *Aq. Phag.* or dress'd with a Pledgit dipt in *Tinct. Myrrhæ*: And if Excoriations are spread round the Ulcer, they may be anointed with *Sperm. Cet.* Ointment, or *Unguent. Nutritum*.

THE *Red Precipitate* has of late Years got into the Credit it deserves for the Cure of Ulcers, but by falling into general use is often very unskilfully applied: When mix'd up with the *Basilicon*, or what is neater a Cerate of Wax and Oil, it is most certainly a Digestive, since it hardly ever fails to make the Ulcer yield a thick Matter in twenty-four Hours, which discharg'd a thin one before the Application of it. As greater Proportions of it are added to the Cerate, it approaches to an Escharotick; but while it is mix'd with any Ointment, it is much less painful and corrosive than when sprinkled on a Sore in Powder; though in this Form, it is almost universally employ'd, but I think injudiciously: For as it is a strong Escharotick, much of it can never be used with-

without making a Slough, and therefore continually repeating it Day after Day will be making a Succession of Sloughs; or if it be sprinkled on a Slough already form'd, in order to quicken the Separation of it, so much of the Powder as lies on the dead Surface will be of no force, and the rest that lies at the bottom, and about it, will produce other Sloughs there, by keeping under and destroying the little Granulations of Flesh, which in their Growth would elevate and push off the first Slough, so that it cannot be a proper Remedy in this Case. If it be answer'd, that daily Practice should convince us that *Precipitate* has not this ill effect, since we see Sloughs continually separating, notwithstanding the use of it, the same sort of Argument may be us'd in favour of any bad Practice, since Nature often surmounts the greatest Obstacles to a Cure: But whoever will attend carefully, without any Prejudice from this Reasoning, to the two Methods of promoting the Separation of an Eschar, will find it not only more easily, but also more readily effected by soft Digestives, or the *Precipitate* Medicine, than by a great Quantity of the Powder.

IF the Ulcer should be of such a Nature as to produce a spongy Flesh, sprouting very
D high

high above the Surface, it will be necessary to destroy it by some of the Escharoticks or the Knife: This *Fungus* differs very much from that belonging to healing Wounds, being more eminent and lax, and generally in one Mass; whereas the other is in little distinct Protuberances. It approaches often towards a cancerous complexion, and when it rises upon some Glands does actually degenerate sometimes into a Cancer, as has happened in Buboes of the Groin. When these Excrescences have arose in Venereal Ulcers, I have par'd them with a Knife, but the Flux of Blood is ordinarily so great, that I do not recommend the Method, and rather prefer the Escharoticks. Those in use are the *Vitriol*, the *Lunar Caustick*, the *Lapis Infernalis*, and more generally the red *Precipitate* Powder; but even in this Case I do not think that Powder the best Remedy, for tho' I have said it is always an Escharotick, yet the *Pulv. Angel.* which is a Composition of the *Precipitate* Powder and burnt Alum, eats deeper, and I think is preferable to the *Precipitate* alone.

IT is but seldom that these inveterate *Fungus's* appear on an Ulcer; but it is very usual for those of a milder kind to rise, which may often be made to subside with Pressure, and the use of mild Escharoticks; however if the
Aspect

Aspect of the Sore be white and smooth, as happens in Ulcers with a Dropsy, and often in young Women with Obstructions, 'twill answer no purpose to waste the Excrescencies 'till the Constitution is repair'd, when most probably they will sink without any Assistance. In Ulcers also where the subjacent Bone is carious, great Quantities of loose flabby Flesh will grow up above the Level of the Skin; but as the Caries is the Cause of the Disorder, 'twill be in vain to expect a Cure of the Excrescence, 'till the rotten Part of the Bone is remov'd, and every Attempt with Escharoticks will be only a Repetition of Pain to the Patient, without any Advantage. In serophulous Ulcers of the Glands, and indeed of almost every part, this Disorder is very common; but before Trial of the severe Escharoticks, I would recommend the use of the strong *Precipitate* Medicine, with Compress as tight as can be bore without Pain, which I think generally keeps it under.

WHEN the Excrescence is cancerous, and does not rise from a large Cancer, but only from the Skin itself, it has been usual to recommend the actual Cautery; though I have found it more secure, to cut away quite underneath, and dress afterwards with easy Applications; but the Cases where either of these

Methods are practicable, occur very rarely. As to the Treatment of incurable cancerous Ulcerations, after much Trial, Surgeons have at last discovered that what gives the most Ease to the Sore, is the most suitable Application, and therefore the use of Escharoticks is not to be admitted on any Pretence whatsoever; nor in those Parts of a Cancer that are corroded into Cavities, must the *Precipitate* be made use of to procure Digestion, or promote the Separation of the Sloughs. The best way therefore is to be guided by the Patient what Medicine to continue, after having try'd three or four, if the first or second don't agree with him. Those usually prescribed are Preparations from Lead, but what I have found most beneficial, have been sometimes dry Lint alone, when it does not stick to the Cancer; at other times Lint Dossils spread with *Basilicon* or *Cerat. de Lapid. Calam.* and oftener than either with a *Cerate* made of Oil and Wax, or the *Sperm. Cet.* Ointment; and over all a Pledgit of Tow spread with the same. Embrocating the neighbouring Skin and Edges of it with Milk, is of service; but the chief good is to be acquir'd by Diet, which should be altogether of Milk, and things made of Milk, though Herbage may be admitted also. Issues in the Shoulders

or Thighs do also alleviate the Symptoms, and Manna with the purging Waters, once, or perhaps twice a Week, will serve to keep the body cool. All methods more violent generally exasperate Cancers, and are to be rejected in favour of this, which is sometimes amazing in its effects, not only procuring Ease, but lengthening Life.

WHEN Ulcers or Abscesses are accompanied with Inflammation and Pain, they are to be assisted with Fomentations made of some of the dry Herbs, such as *Roman Wormwood*, Bay-leaves, and Rosemary; and when they are very putrid and corrosive, which circumstances give them the name of Foul Phagædenick Ulcers, some Spirits of Wine should be added to the Fomentation, and the Bandage be also dipt in Brandy or Spirits of Wine, observing in these cases where there is much pain always to apply gentle Medicines 'till it is remov'd.

As to the frequency of dressing and fomenting, I think it may be laid down for a Rule in all Sores, that where the Discharge is famous, and corrosive, twice a-day is not too much; if the Matter be not very putrid and thin, once will suffice. When the Pain and Inflammation are excessive, Bleeding and other

Evacuations will often be serviceable, and above all things, Rest and a horizontal Position; which last Circumstance is of so great importance to the cure of Ulcers of the Legs, that unless the Patient will conform to it strictly, the skill of the Surgeon will often avail nothing; for as the Indisposition of these Sores is in some measure owing to the Gravitation of the Humours downwards, it will be much more beneficial to lie along than sit upright, though the Leg be laid on a Chair, since even in this posture they will descend with more force than if the Body was reclin'd.

IN Ulcers of the Legs accompany'd with Varices or Dilatations of the Veins, the method of Treatment will depend upon the other circumstances of the Sore, for the Varix can only be assisted by the application of Bandage, which must be continued a considerable time after the cure; the neatest Bandage is the strait Stocking, which is particularly serviceable in this case, though also if the Legs are oedematous, or if after the healing of the Ulcers, they swell when the Patient gets up, it may be wore with safety and advantage. There are instances of one Vein only being varicous, which when it happens may be destroy'd by tying it above and below the Dilatation,

Dilatation, as in an Aneurism; but this Operation should only be practised where the Varix is large and painful.

ULCERS of many Years standing are very difficult of cure, and in old people the cure is often dangerous, frequently exciting an Asthma, a Diarrhœa, or Fever, which destroys the Patient unless the Sore break out again, so that it is not altogether advisable to attempt the absolute cure in such cases, but only the reduction of them into better order, and less compass, which, if they be not malignant, is generally done with Rest, and proper Care. The cure of those in young People may be undertaken with more safety, but we often find it necessary to raise a Salivation to effect it, though when compleated it does not always last, so that the prospect of cure in stubborn old Ulcers at any time of life, is but indifferent. In all these cases however it is proper to purge once or twice a-week with *Calomel*, if the Patient can bear it, and to make an Issue when the Sore is almost healed, in order to continue a discharge the Constitution has been so long habituated to, and prevent its falling upon the Cicatrix, and bursting out again in that place.

I N T R O D U C T I O N.

WHEN an Ulcer or Abscess has any Sinus's or Channels opening and discharging themselves into the Sore, they are call'd sinuous Ulcers; these Sinus's, if they continue to drain a great while, grow hard in the Surface of their Cavity, and then are termed Fistulæ, and the Ulcer a fistulous Ulcer; also if Matter be discharged from any Cavity, as those of the Joints, the Abdomen, &c. the Opening is call'd a sinuous Ulcer, or a Fistula.

THE Treatment of these Ulcers depends on a variety of Circumstances: If the Matter of the Sinus be thick, strict Bandage and Compress will sometimes bring the opposite Sides of the Sinus to a re-union; if the Sinus grows turgid in any part, and the Skin thinner, shewing a Disposition to break, the Matter must be made to push more against that part, by plugging it up with a Tent, and then a Counter-opening must be made, which proves often sufficient for the whole Abscess, if it be not afterwards too much tented, which locks up the Matter, and prevents the Healing, or too little, which will have the same effect: for dressing quite superficially does sometimes prove as mischievous as Tents, and for nearly the same Reason, since suffering the external Wound to contract into a narrow Orifice before the internal one is incarned,

earned, does almost as effectually lock up the Matter as a Tent: To preserve then a medium in these cases, a hollow Tent of Lead or Silver may be kept in the Orifice, which at the same time that it keeps it open gives vent to the Matter. The Abscesses where the Counter-openings are made most frequently are those of compound Fractures, and the Breast; but the latter do oftener well without Dilatation, than the former, though it must be perform'd in both, if practicable, the whole length of the Abscess, when after some trial the Matter does not lessen in quantity, and the sides of it grow thinner; and if the Sinus's be fistulous, there is no expectation of Cure without Dilatation: There are also a great many scrophulous Abscesses of the Neck, that sometimes communicate by Sinus's running under large Indurations, in which Instances Counter-openings are adviseable, and generally answer without the necessity of dilating the whole length; and indeed there are few Abscesses in this Distemper that should be open'd beyond the thinness of the Skin: When Abscesses of the Joints discharge themselves, there is no other Method of treating the Fistula but keeping it open with the Cautions already laid down, 'till the Cartilages of the extremities of the Bones being corroded, the two Bones shoot

shoot into one another, and form an Anchylosis of the Joint, which is the most usual Cure of Ulcers in that part.

GUN-SHOT Wounds often become sinuous Ulcers, and then are to be consider'd in the same light as those already described; though Surgeons have been always inclin'd to conceive there is something more mysterious in these Wounds than any others; but their terribleness is owing to the violent Contusion and Laceration of the Parts, and often to the admission of extraneous Bodies into them, as the Bullet, Splinters of Clothes, &c. and were any other force to do the same thing, the Effect would be exactly the same as when done by Fire-Arms. The Treatment of these Wounds consists in removing the extraneous Body as soon as possible, to which end the Patient must be put into the same Posture as when he received the Wound: if it cannot be extracted by cutting upon it, which should always be practis'd when the situation of the Blood-Vessels, &c. does not forbid, it must be left to Nature to work out, and the Wound dress'd superficially, for we must not expect, that if it be kept open with Tents, the Bullet, &c. will return that way, and there is hardly any case where Tents are more pernicious than here because of the violent Tension and Disposition

Gangrene that presently ensue. To guard against the Mortification in this and all other violent contus'd Wounds, 'twill be proper to bleed the Patient immediately, and soon after give a Clyster; the Part should be dress'd with soft Digestives, and the Compress and Roller apply'd very loose, being first disipp'd in Brandy or Spirits of Wine: The next time the Wound is open'd, if it be dangerous, the spirituous Fermentation may be employ'd, and after that continued 'till the danger is over. If a Mortification comes on, the Applications for that Disorder must be us'd: In gun-shot Wounds it seldom happens that there is any effusion of Blood unless a large Vessel is tore, but the Bullet makes an Eschar, which usually separates in a few days, and is follow'd with a plentiful Discharge; but when the Wound is come to this Period, it is manageable by the Rules already laid down.

WHEN an Ulcer with loose rotten Flesh discharges more than the size of it should yield, and the Discharge is oily and stinking, in all probability the Bone is carious, which may easily be distinguished by running the Probe through the Flesh, and if so, it is call'd a carious Ulcer: The Cure of these Ulcers depends principally upon the Removal of the rotten part of the Bone, without which it will be impossible to heal,

heal, as we see sometimes even in little Sores on the lower Jaw, which taking their rise from a rotten Tooth will not admit of cure 'till the Tooth is drawn. Those Caries that happen from the Matter of Abscesses lying too long upon the Bone, are most likely to recover: Those of the Pox very often do well, because that Distemper fixes ordinarily upon the middle and outside of the densest Bones, which admit of Exfoliation; but those produced by the Evil, where the whole extremities or spongy parts of the Bone are affected, are exceeding dangerous, though all enlarged Bones are not necessarily carious, and there are Ulcers sometimes on the Skin that cover them, which do not communicate with the Bone, and consequently do well without Exfoliation.

THE Method of treating an Ulcer with Caries is by applying a Caustick of the size of the scale of the Bone that is to be exfoliated, and after having laid it bare, to wait 'till such time as the carious part can, without violence, be separated, and then heal the Wound: I caution against violence because the little jagged bits of Bone that would be left, if we attempted Exfoliation, before the piece was quite loose and disengaged from the sound Bone, would form little Ulcerations, and very much retard the Cure.

In order to quicken the Exfoliation, there have been several Applications devis'd, but that which has been most us'd in all Ages has been the actual Cautey, with which Surgeons burn the naked Bone every day, or every other day, to dry up, as they say, the Moisture, and by that means procure the Separation; but as this Practice is never of great service, and always cruel and painful, it is now pretty much exploded: indeed from considering the appearance of a Wound, when a scale of Bone is taken out of it, there is hardly any question to be made, but burning retards rather than hastens the Separation, for as every scale of a carious Bone is hung off by new Flesh generated between it and the sound Bone, whatever would prevent the growth of these Granulations would also in a degree prevent the Exfoliation, which must certainly be the effect of a red-hot Iron applied so close to it; though the circumstances of carious Bones, and their disposition to separate, are so different one from another, that it is hardly to be gathered from experience, whether they will sooner exfoliate with or without the assistance of Fire: for sometimes, in both methods, an Exfoliation is not procur'd in a Twelvemonth, and at other times it happens in three Weeks, or a Month; nay I have, upon cutting out the Eschar
made

made by the Caustick, taken away at the same time a large Exfoliation: However if it be only uncertain whether the actual Cautery is beneficial or no, the Cruelty that attends the use of it should entirely banish it out of Practice. It is often likewise in these cases employ'd to keep down the fungous Lips that spread upon the Bone, but it is much more painful than the Escharotick Medicines; though there will be no need of either, if a regular Compress be kept on the Dressings; or at worst, if a flat piece of the prepared Sponge, of the size of the Ulcer, be roll'd on with a tight Bandage, it will swell on every side, and dilate the Ulcer without any pain.

SOME Caries of the Bones are so very shallow that they crumble insensibly away, and the Wound fills up; but in these cases it is proper to scrape the Bone with a Rugine, and so likewise Bones that will neither exfoliate or granulate, must be scrap'd down to the quick. In the Evil the Bones of the *Carpus* and *Tarsus* are often affected, but their Sponginess is the reason they are but seldom cured; so that when these, or indeed the extremities of any of the Bones are carious through their Substance, it is advisable to amputate; tho' there are Instances, and especially in critical Abscesses, where, after long dressing down, the Splinters, and sometimes the

whole

whole Substance of the small Bones, have work'd away, and a healthy habit of Body coming on, the Ulcer has healed; but these are so rare, that no great dependence is to be laid on such an event. The Dressings of carious Bones, if they are stinking, may be Doffils dipt in the Tincture of Myrrh, otherwise those of dry Lint are easiest, and keep down the Edges of the Ulcer better than any other gentle Applications.

BURNS are generally esteem'd a distinct kind of Ulcers, and have been treated with a greater variety of Applications, than any other species of Sore, every Author having invented some new Medicine to fetch out the Fire, as they imagine; and indeed the Conceit of a quantity of Fire remaining in the part burnt, has occasion'd the Trial of very whimsical and painful Remedies; though People who talk thus seriously of Fire in Wounds, do not think of any remaining in a Stick that is half burnt, and ceases to burn any farther; notwithstanding the reasoning is the same in Burns of the Flesh, and Burns of a Stick.

WHEN Burns are very superficial, not raising suddenly any Vesication, Spirits of Wine are said to be the quickest Relief; but whether they are more serviceable than Embrocations with Linseed-Oil, I am not certain, though they are used very much by some Persons whose Trade subjects

subjects them often to this Misfortune. If the Burn excoriates, I think it is easiest to roll the part up gently with Bandages dipt in Linseed Oil, or a mixture of *Unguent. Flor. Samb.* with the Oil: When the Excoriations are very tender, dropping warm Milk upon them every Dressing is very comfortable; or if the Patient can bear to have Flannels wrung out of it, applied hot, it may be still better: If the Burn has form'd Eschars, they may be dress'd with *Basilicon*, though generally Linseed-Oil alone is easier, and in these Sores whatever is the easiest Medicine will be the best Digestive. I have sometimes found it necessary to apply different Ointments to Burns, where the Aspect has been nearly the same, and upon changing them the Patient has complain'd of great pain; so that we are oblig'd sometimes to determine what is proper from Trial. The most likely things to succeed at first are, the Linseed-Oil, *Ungt. Flor. Samb. Ungt. Basilicon*, and a Cerate of Wax and Oil, and afterwards the *Cerate de Lapid. Calam. Ungt. Rub. Desiccat. Ungt. Sperm. Cat.* the Nutritum with but little Vinegar in it, or perhaps when the *Fungus* rises, dry Lint. There is great care necessary to keep down the *Fungus* of Burns, and heal the Wounds smooth, to which end the Edges should be dress'd with Linseed Oil.

pt in *Aqu. Vitriol.* and dry'd afterwards, or they may be touch'd with the Vitriol-Stone, and the Dressings be repeated twice a-day. There is also greater danger of Contractions from Burns after the Cure, than from other Wounds; to obviate which, Embrocations of Neats-foot Oil, and Bandage with Pasteboards, to keep the part extended, are absolutely necessary, where they can be applied.

The E X P L A N A T I O N.

A. A Director by which to guide the Knife in the opening of Abscesses that are burst of themselves, or first punctur'd with a Lancet. This Instrument should be made of Silver which may be bent and accommodated better to the Direction of the Cavity than Steel or Iron. It is usually made quite straight, but that Form prevents the Operator from holding it firm while he is cutting, upon which account I have given the shape here represented. The manner of using it is, by passing the Thumb through the Ring, and supporting it with the Fore-finger, while the straight-edged Knife is to slide along the Groove with its Edge upwards, towards the extremity of the Abscess.

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B. The

B. The straight-edged Knife, proper for opening Abscesses with the assistance of a Director, but which, in few other respects, is preferable to the round-edged Knife.

C. A crooked Needle, with its convex and concave Sides sharp: This is us'd only in the Suture of the Tendon, and is made thin, that but few of the Fibres of so slender a Body as a Tendon, may be injur'd in the passing of it. This Needle is large enough for the stitching the *Tendo Achillis*.

D. The largest crooked Needle necessary for the tying of any Vessels, and should be us'd with a Ligature of the size of that I have threaded with, in taking up the Spermatick Vessels in Castration, or the Crural and Humeral Arteries in Amputation. This Needle may also be us'd in sewing up deep Wounds.

E. A crooked Needle and Ligature of the most useful size, being not much too little for the largest Vessels, nor a great deal too big for the smallest; and therefore in the taking up of the greatest number of Vessels in an Amputation, is the proper Needle to be employed. This Needle also is of a convenient size for sewing up most Wounds.

F. A small crooked Needle and Ligature for taking up the lesser Arteries, such as those of the

Scalp

Scalp, and those of the Skin that are wounded in opening Abscesses.

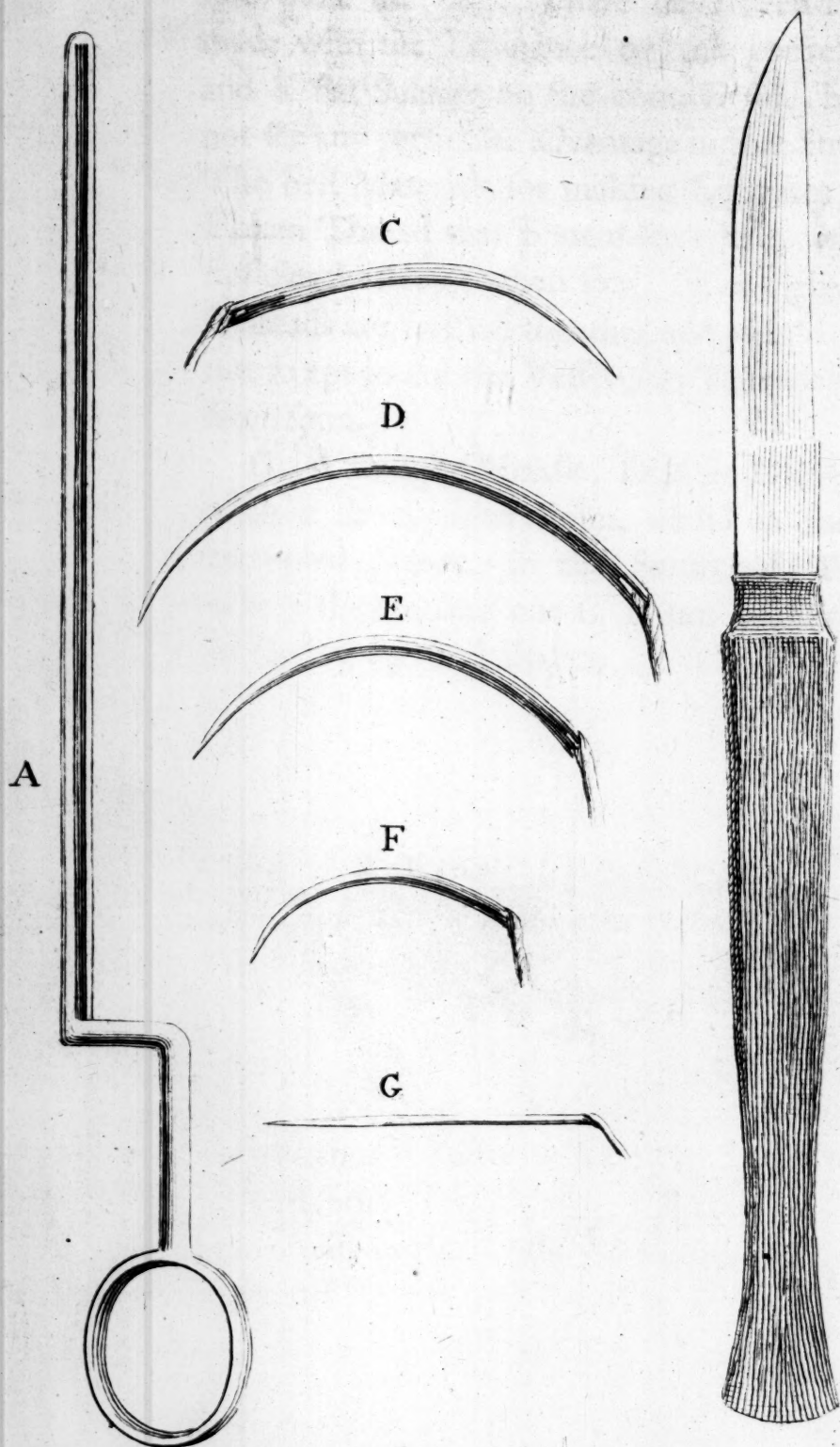
Great care should be taken by the Makers of these Needles to give them a due Temper, for if they are too soft, the force sometimes exerted to carry them through the Flesh will bend them; if they are too brittle, they snap; both which Accidents may happen to be terrible Inconveniences if the Surgeon is not provided with a sufficient number of them. It is of great Importance also to give them the Form of part of a Circle, which makes them pass much more readily round any Vessel, than if they were made partly of a Circle and partly of a straight Line, and in taking up Vessels at the Bottom of a deep Wound is absolutely necessary, it being impracticable to turn the Needle with a straight Handle, and bring it round the Vessel when in that situation. The convex Surface of the Needle is flat, and its two Edges are sharp. Its concave side is compos'd of two Surfaces, rising from the Edges of the Needle, and meeting in a Ridge or Eminence, so that the Needle has three sides. This Eminence of the Substance of the Needle on its Inside strengthens it very much, but is not continued the whole length of the Needle, which is flat towards the Eye; some are made round in this part, but they cannot be held steady

between the Finger and Thumb, and are therefore unfit for use. There have been Needles made with the Eminence on the convex side, and a flat Surface on the concave side, but I do not see any particular advantage in that Structure. The best Materials for making Ligatures are the Flaxen Thread that Shoemakers use; which is sufficiently strong when four, six or eight of the Threads are twisted together and wax'd; and is not so apt to cut the Vessels, as Threads that are finer spun.

G. A straight Needle, such as Glovers use with a three-edged Point, useful in the uninterrupted Suture, in the Suture of Tendons where the crooked one C. is not preferr'd, and in sewing up dead Bodies.



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TREATISE

OF THE

Operations of *SURGERY*.

CHAP. I.

Of *SUTURES*.



WHEN a Wound is recent, and the Parts of it are divided by a sharp Instrument without any farther violence, and in such manner that they may be made to approach each

other, by being returned with the Hands, they will, if held in close contact for some time, unite by Inosculation, and cement like one

Branch of a Tree ingrafted on another. To maintain them in this situation, several sorts of Sutures have been invented, and formerly practis'd, but the number of them has of late been very much reduced. Those now chiefly described are the interrupted, the Glover's, the quill'd, the twisted, and the dry Sutures, but the interrupted and twisted are almost the only useful ones, for the quill'd Suture is never preferable to the interrupted, the dry Suture is ridiculous in terms, since it is only a piece of Plaister applied in many different ways to reunite the Lips of a Wound: and the Glover's or uninterrupted Stitch, which is advised for superficial Wounds to prevent the deforming of a Scar, does rather by the frequency of the Stitches occasion it, and is therefore to be rejected in favour of a Compress and sticking Plaister. The only Instance where I would recommend it is in a Wound of the Intestine: the manner of making this Suture I shall describe in the Chapter of the Gastroraphy.

FROM the Description I have given of the state of a Wound proper to be sew'd up, may be readily conceived, that Wounds are not fit subjects for Suture when there is either Contusion, Laceration, loss of Substance, great Inflammation, difficulty of bringing the Lips

into Apposition, or some extraneous Body insinuated into them; though sometimes a lacerated Wound may be assisted with one or two Stitches. It has formerly been forbid to sew up Wounds of the Head, but this Precaution is very little regarded by the Moderns, though the ill effects I have frequently seen from Matter pent up under the Scalp, and the great convenience there is of using Bandage on the Head, have convinc'd me that much less harm would be done, if Sutures were us'd in this part with more caution.

IF we stitch up a Wound that has none of these Obstacles, we always employ the interrupted Suture, passing the Needle two, three, or four times, in proportion to the length of it, though there can seldom be more than three Stitches required.

THE method of doing it is this, the Wound being emptied of the grumous Blood, and your Assistant having brought the Lips of it together, that they may lie quite even; you carefully carry your Needle from without, inwards to the bottom, and so on from within, outwards; using the Caution of making the Puncture far enough from the Edge of the Wound, lest the Ligature should tear quite through the Skin and Flesh; this distance may

be three or fourth tenths of an Inch: as many more Stitches as you shall make, will be only repetitions of the same Process. The Threads being all passed, you begin tying them in the middle of the Wound, though if the Lips are held carefully together all the while, as they should be, it will be of no great consequence which is done first. The most useful kind of Knot in large Wounds is a single one first, over this a little linnen Compress, on which is to be made another single Knot, and then a Slip-knot, which may be loosened upon any Inflammation; but in small Wounds there is no danger from the double Knot alone, without any Compress to tie it upon, and this is most generally practis'd. If a violent Inflammation should succeed, loosening the Ligature only will not suffice, it must be cut through and drawn away, and the Wound be treated afterwards without any farther Suture. When the Wound is small the less it is disturbed by dressing the better, but in large ones there will sometimes be a considerable Discharge, and if the Threads are not cautiously carried through the bottom of it, Abscesses will frequently ensue from the Matter being pent up underneath, and not finding issue. If no accident happens you must, after the Lips are firmly agglutinated,

rated, take away the Ligatures, and dress the Orifices they leave.

IT must be remembered that during the Cure, the Suture must be always assisted by the application of Bandage if possible, which is frequently of the greatest Importance, and that sort of Bandage with two Heads, and a slit in the middle, which is by much the best, will in most cases be found practicable.

THE twisted Suture being principally employed in the Hare-Lip, I shall reserve its description for the Chapter on that Head.



C H A P. II.

Of the SUTURE *of* TENDONS.

WOUNDS of the Tendons are not only known to heal again, but even to admit of sewing up like those of the fleshy parts, though they do not reunite altogether in so short a time. When a Tendon is partly divided, it is generally attended with an excessive Pain, Inflammation, &c. in consequence of the remaining Fibres being stretch'd and forc'd by the action of the Muscle, which necessarily will

will contract more, when some of its resistance is taken away: To obviate this mischief it has been hitherto an indisputable Maxim in Surgery, to cut the Tendon quite through, and immediately afterwards perform the Suture; but I do not think this Practice advisable, for though the division of the Tendon affords present ease, yet the Flexion only of the Joint will have the same effect, if it be a Wound of a Flexor Tendon: Besides in order to sew up the extremities of the Tendon when divided, we are obliged to put the Limb in such a situation, that they may be brought into Contact, and even to sustain it in that posture to the finishing of the Cure: If then the posture will lay the Tendon in this position, we can likewise keep it so without using the Suture, and are more sure of its not slipping away, which sometimes happens from any careless motion of the Joint, when the Stitches have almost wore through the Lips of the Wound, on which account I would by all means advise in this case, to forbear the Suture and only favour the situation of the extremities of the Tendon.

IF it should be suggested that for want of a farther separation, there will not be Inflammation enough to produce an Adhesion of the

the several parts of the Wound, which is particularly mention'd as the Property of this sort of Cicatrix, though it is likewise of all others: I say that the Inflammation will be in proportion to the Wound, and a small Wound is certainly more likely to recover than a large one. If it should be objected that keeping the Limb in one posture the whole time of the Cure, will bring on a Contraction of the Joint, the objection is as strong against the Suture; and now I am upon this Subject, I would advise Surgeons to be less apprehensive of Contractions after Inflammations of the Tendons, than Practice shews they are: For perhaps there is hardly any one Rule has done more mischief than that of guarding against this Consequence, and I would lay it down as a method to be pursued at all times, to favour the Joint in these Disorders, and keep it in that posture we find most easy for the Patient. The risque of an immoveable Contraction in six weeks is very little, but the endeavour to avoid it has been the loss of many a Limb in half the time.

BUT when the Tendon is quite separated, and the ends are withdrawn from one another, having brought them together with your Fingers, you may sew them with a straight triangular

gular pointed Needle, passing it from without inwards, and from within outwards, in a small Tendon, about three tenths of an Inch from their extremities, and in the *Tendo Achillis* half an Inch.

SOME Surgeons for fear the Muscle should contract a little, notwithstanding all our care, advise not to bring the Ends of the Tendon into an exact Apposition, but to lay one a little over the other, which allowing for the contraction that always ensues in some degree, the Tendon will become a straight Line, and not be shorten'd in its length. As the Wound of the Skin will be nearly transverse I would not have it rais'd to expose more of the Tendon, but rather sew'd up with it, which will conduce to the strength of the Suture. The Knot of the Ligature is to be made as in other Wounds, and the Dressings the same: There is a sort of thin crooked Needle that cuts on its concave and convex sides, which is very handy in the Suture of large Tendons, and to be preferr'd to the straight one. During the Cure the Dressings must be superficial, and the parts kept steady with Pastebord and Bandage: The small Tendons re-unite in three Weeks, but the *Tendo Achillis* requires fix at least,



C H A P. III.

Of the GASTRORAPHY.

THE account of this Operation has employ'd the Ingenuity of many Surgical Writers, and occasioned much debate about the proper Rules for performing it, and yet what makes the greatest part of the description can hardly ever happen in Practice, and the rest but very seldom. I have been told that *Du Verney*, who was the most eminent Surgeon in the *French Army* a great many Years during the Wars, and fashion of Dueling, declar'd he never had once an opportunity of practising the Gastroraphy, as that Operation is generally described; for though the word in strictness of Etymology, signifies no more than sewing up any Wound of the Belly, yet in common acceptation it implies that the Wound of the Belly is complicated with another of the Intestine. Now the Symptoms laid down for distinguishing when the Intestine is wounded, do not with any certainty determine it to be wounded only in one place, which want of Information, makes
it

it absurd to open the *Abdomen* in order to come at it; if so, the Operation of stitching the Bowels can only take place, where they fall out of the *Abdomen*, and we can see where the Wound is, or how many Wounds there are: If it happens that the Intestines fall out unwounded, the Business of the Surgeon is to return them immediately without waiting for spirituous or emollient Fomentations; and in case they puff up so, as to prevent their reduction by the same Orifice, you may with a Knife or Probe-Scissars dilate it sufficient for that purpose, or even prick them to let out the Wind, laying it down for a Rule in this, and all Operations where the *Omentum* protrudes, to treat it in the manner that I shall describe in the Chapter on the *Bubonocèle*.

U P O N the supposition of the Intestine being wounded in such a manner as to require the Operation, for in small Punctures it is not necessary; the method of doing it may be this: Taking a straight Needle with a small Thread, you lay hold of the Bowel with your left hand, and sew up the Wound by the Glover's Stitch, that is, by passing the Needle through the Lips of the Wound, from within outwards all the way, so as to leave a length of Thread at both ends, which are to hang out of the

Inci-

Incision of the *Abdomen*; then carefully making the interrupted Suture of the external Wound, you pull the Bowel by the small Threads into contact with the *Peritonæum*, for the more readily uniting afterwards by Adhesion with it; though I think it would be more secure to pass the Threads with the straight Needle through the lower Edges of the Wound of the *Abdomen*, which would more certainly hold the Intestine in that situation. In about six days it is said the Ligature of the Intestine will be loose enough to draw away, which must be done without great force; in the Interim the Wound is to be treated with superficial Dressings, and the Patient to be kept very still and low.



C H A P. IV.

Of the *BUBONOCELE*.

WHEN the Intestine or *Omentum* falls out of the *Abdomen* into any Part, the Tumour in general is known by the Name of *Hernia*, which is farther specified either from the difference of Situation, or the nature of its Contents. When the Intestine or *Omentum* falls through

through the Navel, 'tis call'd a *Hernia Umbilicalis*, or *Exomphalos*; when through the Rings of the Abdominal Muscles into the Groin, *Hernia Inguinalis*; or if into the *Scrotum*, *Scrotalis*: These two last, though the first only is properly so call'd, are known by the Name of *Bubonocoele*. When they fall under the *Ligamentum Fallopii*, through the same Passage that the *Iliac* Vessels creep into the Thigh, 'tis call'd *Hernia Femoralis*. With regard to the Contents characterising the Swelling, it is thus distinguished: If the Intestine only is fall'n, it becomes an *Enterocoele*; if the *Omentum* (*Epiploon*) *Epiplocoele*; and if both, *Enteroplocoe*. There is besides these another kind of *Hernia* mention'd and describ'd by the Moderns, when the Intestine or *Omentum* is insinuated between the Interstices of the Muscles, in different Parts of the Belly: This *Hernia* has derived its name from the Place affected, and is call'd the *Hernia Ventralis*.

ALL the Kinds of *Hernia*'s of the Intestines and *Omentum*, are owing to a præternatural Dilatation of the particular Orifices through which they pass, and not to a Laceration of them, which last Opinion however has prevailed so much as by way of eminence, to give name to the Disorder, which is known
more

more by that of Rupture, than any of those I have mentioned; on which account I shall beg leave to make use of it myself.

THE Rupture of the Groin, or *Scrotum*, is the most common Species of *Hernia*, and in young Children is very frequent, but it rarely happens in Infancy that any mischiefs arise from it. For the most part the Intestine returns of itself into the Cavity of the *Abdomen*, whenever the Person lies down, at least a small degree of Compression will make it. To secure the Intestine when returned into its proper place, there are Steel Trusses now so artfully made, that by being accommodated exactly to the Part, they perform the Office of a Bolster, without galling, or even sitting uneasy on the Patient. These Instruments are of so great service, that were people who are subject to Ruptures always to wear them, I believe very few would die of this Distemper, since it often appears, upon enquiry, when we perform the Operation for the *Bubonocoele*, that the necessity of the Operation is owing to the neglect of wearing a Truss.

IN the Application of a Truss to these kinds of Swellings, a great deal of judgment is sometimes necessary, and for want of it we daily see Trusses put even on *Bubo's*, indurated Testi-

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cles,

cles, *Hydrocele's*, &c. But for the *Hernia's* I have described, I shall endeavour to lay down two or three Rules, in order to guide more positively to the Propriety of applying or forbearing them.

IF there is a Rupture of the Intestine only, it is easily, when return'd into the *Abdomen*, supported by an Instrument; but if of the *Omentum*, notwithstanding it may be return'd, yet I have never found the Reduction to be of much Relief; for the *Omentum* will lie uneasy in a lump at the bottom of the Belly, and upon removal of the Instrument drop down again immediately; upon which account seeing the little Danger and Pain there is in this kind of *Hernia*, I never recommend any thing but a Bag-Truss, to suspend the *Scrotum*, and prevent possibly by that means the increase of the Tumour. The difference of these Tumours will be distinguished by the Feel; that of the *Omentum* feeling flaccid and rumpled, the other more even, flatulent, and springy.

SOMETIMES in a Rupture of both the Intestine and *Omentum*, the Gut may be reduced, but the *Omentum* will still remain in the *Scrotum*, and when thus circumstanced, most Surgeons advise a Bag-Truss only, upon a Supposition that the Pressure of a Steel one, by stopping

stopping the Circulation of the Blood in the Vessels of the *Omentum*, would bring on a Mortification: But I have learnt, from a multitude of these Cases, that if the Instrument be nicely fitted to the Part, it will be a Compress sufficient to sustain the Bowel, and at the same time not hard enough to injure the *Omentum*; so that when a great quantity of Intestine falls down, though it is complicated with a Descent of the *Omentum*, the Rupture will conveniently and safely admit of this Remedy.

THERE are some Surgeons, who to prevent the Trouble of wearing a Truss, when the Intestine is reduced, destroy the Skin over the Rings of the Abdominal Muscles with a Caustick of the size of a half Crown-piece, and keep their Patients in bed 'till the Cure of the Wound is finish'd; proposing by the Stricture of the Cicatrix to support it in the *Abdomen* for the future: But by what I have seen of this Practice, the event, though often successful, is not answerable to the Pain and Confinement; for if after this Operation the Intestine should again fall down, which sometimes happens, there would be much more danger of a Strangulation than before the Scar was made.

I HAVE hitherto considered the Rupture as moveable; but it happens frequently that the Intestine, after it has pass'd the Rings of the Muscles, becomes inflam'd, which enlarging the Tumour, prevents the Return of it into the *Abdomen*, and becoming every moment more and more strangled, it soon tends to a Mortification, unless we dilate the Passages through which it is fallen, with some Instrument, to make room for its return, which Dilatation is the Operation for the *Bubonocoele*.

IT rarely happens that Patients submit to this Incision before the Gut is mortified, and it is too late to do service; not but that there are Instances of People surviving small Gangrenes, and even perfectly recovering afterwards. I myself have been an Eye-witness of the Cure of two Patients who some time after the Operation, when the Eschar separated, discharged their Fæces through the Wound, and continued to do so for a few Weeks in small quantities, when at length the Intestine adhered to the external Wound, and then was fairly healed.

IN Mortifications of the Bowels, when fallen out of the *Abdomen* into the Navel, it is not very uncommon for the whole gangren'd Intestine to separate from the sound one, so

that

that the Excrement must necessarily ever after be discharged at that Orifice: There are likewise a few Instances where the Rupture of the *Scrotum* has mortified and become the *Anus*, the Patient doing well in every other respect; nay, I have had one Instance of this nature under my care, in which the Excrements were voided totally by the *Scrotum* for three Weeks or a Month, yet by degrees, as the Wound heal'd, they pass'd off chiefly in their natural course, and at last almost wholly so. These Cases however are only mention'd to furnish Surgeons with the Knowledge of the possibility of such Events, and not to mislead them so far as to make favourable Inferences with regard to Gangrenes of the Bowels, which generally are mortal.

BEFORE the Performance of the Operation for the *Bubonocoele*, which is always to be done in extremity of Danger, the milder Methods are to be tried; these are, such as will conduce to sooth the Inflammation; for as to the other Intent of softening the Excrements, I believe it is much to be questioned, whether there can be any of that degree of Hardness in the *Ilium*, which is generally the Bowel diseased, as to form the Obstruction; and in fact, those Operators who have unluckily wounded the Intestine, have proved, by the thin Discharge of Fæces which has fol-

lowed upon the Incision, that the Induration we feel is the Tension of the Parts, and not the hardened Lumps of Excrement.

P E R H A P S, except the Pleurisy, no Disorder is more immediately relieved by plentiful Bleeding than this; Clysters repeated one after another three or four times, if the first or second are either retained too long, or immediately return'd, prove very efficacious; these are serviceable, not only as they empty the great Intestines of their Excrements and Flatulencies, which last are very dangerous, but they likewise prove a comfortable Fomentation, by passing through the Colon all around the *Abdomen*. The *Scrotum* and Groin must, during the stay of the Clyster, be bath'd with warm Stoops wrung out of a Fomentation, and with these on the Part you must attempt to reduce the Rupture: For this purpose let your Patient be laid on his Back, so that his Buttocks may be considerably above his Head; the Bowels will then retire towards the Diaphragm, and give way to those which are to be push'd in. If after endeavouring two or three minutes, you do not find Success, you may still repeat the Trial: I have sometimes, at the end of a Quarter of an Hour, returned such as I thought desperate, and which did not seem to give way in the least, 'till the moment they went up; however this

must

must be practis'd with caution, for too much rough handling will be pernicious.

IF, notwithstanding these means, the Patient continues in very great torture, though not so bad as to threaten an immediate Mortification, we must apply some sort of Pultice to the *Scrotum*; that which I use in this case is, equal parts of Oil and Vinegar made into a proper consistence with Oatmeal: After some few hours the Fomentation is to be repeated, and the other Directions put in practice; and if these do not succeed, I am inclin'd to think it adviseable to prick the Intestine in five or six places with a Needle, as recommended by *Peter Lowe*, an old *English* Writer, who says, He has often experienced the good Effects of this Method in the inguinal *Hernia*, when all other means have fail'd.

AFTER all, should the Pain and Tenseness of the Part continue, and Hiccoughs and Vomittings of the Excrements succeed, the Operation must take place; for if you wait till a languid Pulse, cold Sweats, subsiding of the Tumour, and Emphysematous Feel come on, it will be most likely too late, as they are pretty sure symptoms of a Mortification.

To conceive rightly of the Occurrences in this Operation, it must be remembered that in every Species of Rupture the *Peritonæum* falls down

with whatever makes the *Hernia*, for the contents of the *Abdomen* being immediately envelop'd in this Membrane, they cannot push through any Orifice, but they must likewise carry a part of it along with them: So that in the *Bubonocoele*, the Situation of the Tumour will be in the Cavity of the *Scrotum*, upon the *Tunica Vaginalis* and Spermatick Cord.

T H E best way of laying your Patient will be on a Table about three Foot four Inches high, letting his Legs hang down; then properly securing him, you begin your Incision above the Rings of the Muscles, beyond the extremity of the Tumour, and bring it down about half the length of the *Scrotum*, through the *Membrana adiposa*, which will require very little trouble to separate from the *Peritonæum* (call'd *the Sack of the Hernia*) and consequently will expose the Rupture for the farther Processes of the Operation; but I cannot help once more recommending it as a thing of great consequence, to begin the external Incision high enough above the Rings, since there is no danger in that part of the Wound: and for want of the room this Incision allows, the most expert Operators are sometimes tedious in making the Dilatation. If a large Vessel be open'd by the Incision, it must be taken up before you proceed further.

W H E N

WHEN the *Peritonæum* is laid bare, you must cut through it carefully to avoid pricking the Intestines; though to say the truth, there is not quite so much danger of this Accident as is represented, for generally speaking the quantity of Water separated in the *Sack* of the *Peritonæum*, raises it from the Intestine, and prevents any such mischief. This discharge of Water which follows upon wounding the *Peritonæum*, and the Ignorance of the Structure of the *Tunica Vaginalis*, have made it so generally thought that Ruptures were received into the Cavity of that Tunick.

IT has lately been consider'd by some as an Improvement in the Operation, to forbear wounding the *Peritonæum* and to return the *Sack* intire into the *Abdomen*, thinking by this means to make a firmer Cicatrix, and more surely to prevent a Relapse for the future; but besides that this Practice is not founded on Reason in the very particular it is recommended for, the seeming necessity there is of letting out the Waters that are frequently foetid, of taking away the mortified Part of the *Omentum*, which we cannot come at without the Incision, and lastly to leave an Opening for the issue of the Excrements out of the Wound, in case an Eschar should drop

drop from the Intestine, put out of dispute in my opinion, the Impropriety of this new Method.

THE *Peritonæum* being cut through, we arrive to its Contents, the nature of which will determine the next Process; for if they be Intestine only, it must directly be reduced, but if there be any mortify'd *Omentum*, it must be cut off; in order to which it is advised to make a Ligature above the Part wounded, to prevent an Hæmorrhage, but it is quite needless, and in some measure pernicious, as it puckers up the Intestine, and disorders its situation, if made close to it: For my part I am very jealous that Wounds of the *Omentum* are dangerous, on which account I cannot pass over this part of the Operation, without cautioning against cutting any of it away, unless it is certainly gangrened; and when that happens, I think it adviseable to cut off only some of the mortify'd Part, and leave the rest to separate in the *Abdomen*, which may be done with as much safety, as leaving the same quantity below a Ligature.

WHEN the *Omentum* is remov'd, we next dilate the Wound, to do which with safety an infinite number of Instruments have been invented; but in my opinion there is none we

can use in this case with so good management as a Knife; and I have found my Finger in the Operation a much better defence against pricking the Bowels than a Director which I intended to employ; The Knife must be a little crooked and blunt at its extremity, like the end of a Probe. Some Surgeons perhaps may not be steady enough to cut dexterously with a Knife, and may therefore perform the Incision with Probe-Scissars, carefully introducing one Blade between the Intestine and circumference of the Rings, and dilating upwards. When the Finger and Knife only are employ'd, the manner of doing the Operation will be by pressing the Gut down with the Fore-finger, and carrying the Knife between it and the Muscles, so as to dilate upwards about an Inch, which will be a Wound large enough.

THE Opening being made, the Intestine is gradually to be push'd into the *Abdomen*, and the Wound to be stitch'd up; for this purpose some advise the quill'd, and others the interrupted Suture to be pass'd through the Skin and Muscles; but as there is not so much danger of the Bowels falling out when a Dressing and Bandage are applied, and the Patient all the while kept upon his Back, but that it may
be

be prevented by one or two slight Stitches through the Skin only, I think it by all means adviseable to follow this Method, since the stricture of a Ligature in these tendinous Parts cannot but be dangerous.

H I T H E R T O in the description of the *Bu-*
bonocele I have suppos'd it loose, or separate in the *Sack* and *Scrotum*, but it happens sometimes in an Operation, that we find not only an Adhesion of the outside of the *Peritonæum* to the *Tunica Vaginalis*, and spermatick Vessels, but likewise of some part of the Intestines to its internal Surface; and in this case there is so much confusion that the Operator is often obliged to extirpate the Testicle, in order to dissect away and disentangle the Gut, tho' if it can be done without Castration it ought. I believe however, this Accident happens rarely, except in those Ruptures that have been a long time in the *Scrotum* without returning; in which case the difficulty and hazard of the Operation are so great, that unless urged by the symptoms of an inflamed Intestine, I would not have it undertaken. I have known two Instances of Persons so uneasy under the circumstance of such a load in their *Scrotum*, tho' not otherwise in pain, as to desire the Operation, but the Event in both

both proved fatal; which I think should make us cautious how we expose a Life for the sake of a convenience only, and teach our Patients to content themselves with a Bag-Truss, when in this condition.

THE dressing of the Wound first of all may be with dry Lint, and afterwards as directed in the Introduction.

THE Operation of the *Bubonocoele* in Women so exactly resembles that perform'd on Men, that it requires no particular description, only in them the Rupture is form'd by the Intestine or *Omentum* falling down through the Passage of the *Ligamentum Rotundum* into the Groin, or one of the *Labia Pudendi*; where causing the same symptoms as when obstructed in the *Scrotum*, it is to be return'd by the Dilatation of that Passage.



CHAP. V.

Of the *EPIPLOCELE*.

HERE have been a few Instances where so great a quantity of the *Omentum* has fallen into the *Scrotum*, that by drawing the Stomach and Bowels downwards, it has excited

cited Vomitings, Inflammation, and the same train of Symptoms as happen in a *Bubonocoele*; in which case the Operation of opening the *Seratum* is necessary: The Incision must be made in the manner of that for the Rupture of the Intestine, and the same Rules observed with regard to the *Omentum*, that are laid down in the last Chapter. It is necessary also the Rings of the Muscles should be dilated, or otherwise, though you have taken away some of the mortify'd part of the *Omentum*, the rest that is out of its place and strangled in the Perforation will gangrene also. The Wound is to be treated in the same manner as that after the Operation of the *Bubonocoele*. What I have here described as an Inducement to the Operation, should, by the Experience I have had, be the only one. There are a great many People who are so uneasy with Ruptures, though they are not painful, that a little encouragement from Surgeons of Character will make them submit to any means of Cure; but as I have seen two or three Patients, who were in every respect hale and strong, die a very few days after the Operation, the Event, though very surprising, should be a Lesson never to recommend this method of treating an *Epiplocele*, unless it is attended with Inflammation, &c.

C H A P. VI.

Of the HERNIA FEMORALIS.

THIS Species of Rupture is the same in both Sexes, and form'd by the falling of the *Omentum* or Intestine, or both of them, into the Inside of the Thigh, through the Arch made by the *Os Pubis*, and *Ligamentum Fallopii*, where the Iliac Vessels and Tendons of the *Psoas* and *Iliacus Internus* Muscles pass from the *Abdomen*. It is very necessary, Surgeons should be aware of this Disorder, which creates the same Symptoms as other Ruptures, and must first of all be treated by the same Methods: The manner of operating in the Reduction is also so nearly the same, with the difference only of dilating the Ligament instead of the Rings of the Muscles, that it would be a mere Repetition of the Operation for the *Bubonocoele* to give any Description of it.





C H A P. VII.

Of the *EXOMPHALOS*.

THIS Rupture is owing to a Protrusion of the Intestine, or *Omentum*, or both of them, at the Navel, and rarely happens to be the Subject of an Operation; for though the Case is common, yet most of them are gradually form'd from very small Beginnings, and if they do not return into the *Abdomen* upon lying down, in all probability they adhere without any great Inconvenience to the Patient, 'till some time or other an Inflammation falls upon the Intestines, which soon brings on a Mortification, and Death, unless by great chance the mortified Part separates from the sound one, leaving its Extremity to perform the Office of an *Anus*: In this Emergency however I think it adviseable to attempt the Reduction, if call'd in at the beginning, though the universal Adhesion of the *Sack* and its Contents, are a great Obstacle to the Success: The Instance in which it is most likely to answer, is, when the Rupture is owing to any Strain, or sudden Jerk, and

attended with those Disorders that follow upon the Strangulation of a Gut.

IN this Case, having tried all other means in vain, the Operation is absolutely necessary, which may be thus performed: Make the Incision somewhat above the Tumour, on the left side of the Navel, through the *Membrana Adiposa*, and then emptying the *Sack* of its Water, or mortified *Omentum*, dilate the Ring with the same crooked Knife, conducted on your Finger, as in the Operation for the *Bubonocoele*; after this, return the Intestines and *Omentum* into the *Abdomen*, and dress the Wound without making any Ligature, but of the Skin only.





C H A P. VIII.

Of the HERNIA VENTRALIS.

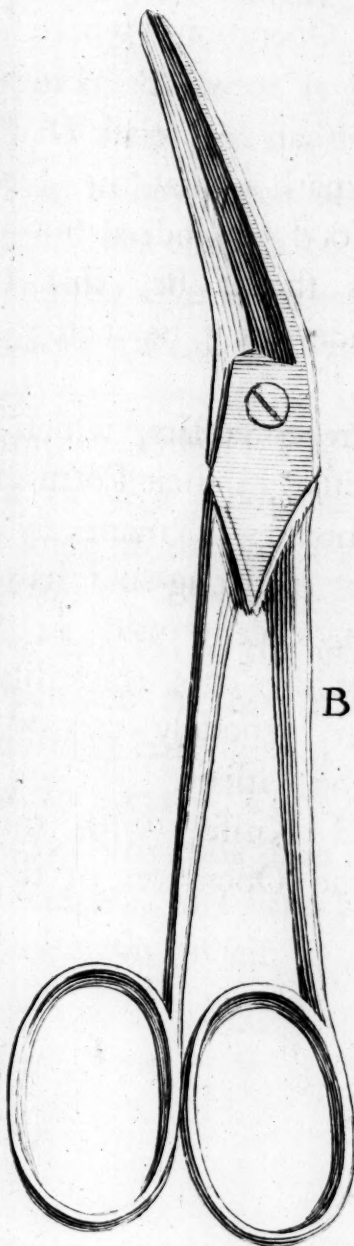
THIS Tumour is seldom larger than Walnut, and is a Disease not so common as to have been observed by many, but there are Cases enough known to put a Surgeon upon enquiry after it, when the Patient is suddenly taken with all the Symptoms of a Rupture without any appearance of one in the Navel, Scrotum, or Thigh: I have before defined the *Hernia* to be a Strangulation of the Gut, between some of the Interstices of the Muscles of the *Abdomen*: The manner of dilating it will be as above directed in the other *Hernia*'s: After the Operation in this, and all *Hernia*'s when the Intestines have been reduced, 'twill be convenient to wear a Truss, since the Cicatrix is not always firm enough in any of them, to prevent a Relapse, as I have had several Opportunities to inform myself.

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P L A T E II.

The E X P L A N A T I O N.

A. The round-edged Knife, of a convenient Size for almost all Operations where a Knife is used; the Make of it will be better understood by the Figure than any other Description; only it may be remark'd that the Handle is made of a light Wood, as indeed the Handles of all Instruments should be, that the Resistance to the Blades may be better felt by the Surgeon.

B. A pair of Probe-Scissars, which require nothing very particular in their Form but that the lower Blade should be made as small as possible; so that it is strong and has a good Edge, because being chiefly us'd in Fistula's in *Ano*, the Introduction of a thick Blade into the Sinus, which is generally narrow, would be very painful to the Patient.

C. The crooked Knife; with the Point blunted, us'd in the Operation of the *Bubonocoele*.



C H A P. IX.

Of the HYDROCELE.

THE *Hydrocele*, call'd also *Hernia Aquosa*, *Hydrops Scroti*, and *Hydrops Testis*, is a watry Tumour of the *Scrotum*; which notwithstanding the multiplicity of Distinctions us'd by Writers, is but of two kinds: The one when the Water is contain'd in the *Tunica Vaginalis*, and the other when in the *Membrana Cellularis Scroti*: This last is almost always complicated with an *Anasarca*, which Species of Dropsy is an Extravasation of Water lodged in the Cells of the *Membrana Adiposa*; and when thus circumstanced will not be difficult to be distinguish'd; besides that it is sufficiently characteris'd by the shining and softness of the Skin, which gives way to the least Impression, and remains pitted for some time. The *Penis* is likewise sometimes enormously enlarged, by the Insinuation of the Fluids into the *Membrana Cellularis*, all which Symptoms are absolutely wanting in the Dropsy of the *Tunica Vaginalis*.

IN the Dropfy of the *Membrana Cellularis Scroti*, the Puncture with the Trocar, is recommended by some, and little Orifices made here and there with the Point of a Lancet by others, or a small Skane of Silk pass'd by a Needle through the Skin, and out again at the distance of two or three Inches, to be kept in the manner of a Seton, 'till the Waters are quite drained: But the two first Methods avail very little, as they open but few Cells; and the last cannot be so efficacious in that respect as Incisions, and will be much more apt to become troublesome, and even to gangrene.

INDEED it is not often proper to perform any Operation at all upon this Part, since the *Membrana Cellularis Scroti*, being a continuation of the *Membrana Adiposa*, Scarifications made through the Skin in the Small of the Legs will effectually empty the *Scrotum*, as I have many times experienced; and this Place ought rather to be pitch'd upon than the other, as being more likely to answer the purpose by reason of its Dependency: However it sometimes happens that the Waters fall in so great quantities into the *Scrotum*, as by distending it to occasion great Pain, and threaten a Mortification: The Prepuce of

the *Penis* also becomes very often excessively dilated, and so twisted that the Patient cannot void his Urine. In these two Instances I would propose an Incision of three Inches long to be made on each side of the *Scrotum*, quite through the Skin into the Cells containing the Water, and two or three, of half an Inch long in any part of the *Penis*, with a Lancet or Knife; all which may be done with great Safety, and sometimes with the Success of carrying off the Disease of the whole Body. This I can positively say, that though I have done it upon Persons in a very languid Condition, yet by making the Wound with a sharp Instrument, and treating it afterwards with Fomentations and soft Digestives, I have rarely seen any Instance of a Gangrene, which is generally so much apprehended in this Case.

THE Dropsy of the *Tunica Vaginalis* is owing to a preternatural Discharge of that Water which is continually separating in a small quantity on the internal Surface of the Tunick, for the moistening or lubricating the Testicle, and which collecting too fast, heaps up and forms in time a Swelling of great magnitude: This is what I take to be the other Species of *Hydrocele*, and the only one besides;

besides ; though from the time of *Celsus* down to our own Days, the Writers on this Subject make two kinds, one on the Inside of the *Tunica Vaginalis*, and another between the *Scrotum* and Outside of it, and among the Causes assigned for this Distemper, the principal one is the Derivation of Water from the *Ascites*, which Opinion though universally received, is absurd in Anatomy: For besides, that People afflicted with a *Hydrocele* are very seldom otherwise dropfical, and on the contrary, those with an *Ascites* have no *Hydrocele*; the *Tunica Vaginalis* is like a Purse totally shut up on the Outside of the *Abdomen*, so that no Water from any Part can insinuate into it; and with respect to the Notion of Water falling from the *Abdomen* into the Interstice of the *Tunica Vaginalis* and *Scrotum*, it is equally impossible; for though in the *Hernia Intestinalis*, the Gut falls into this Part, yet in that Case the *Peritonæum* (which would hinder the Egress of the Water) falls down too, which the Ancients did not know, and the Moderns have omitted to reflect on in relation to this Subject.

THE *Hydrocele* of the *Tunica Vaginalis* is very easily to be distinguished from the *Hydrocele* of the *Membrana Cellularis*, by

the preceding Description of that Species of Dropsy: I shall now explain how it differs from the other Tumours of the *Scrotum*, viz. the *Bubonocoele*, *Epiplocele*, and enlarg'd Testicle: In the first place, it is seldom or never attended with Pain in the beginning, and is very rarely to be imputed to any Accident, as the *Hernia's* of the *Omentum* and Intestine are; from the time it first makes its Appearance it hardly is ever known to diminish, but generally continues to increase, though in some much faster than in others; in one Person growing to a very painful Distension in a few Months, whilst in another it shall not be troublesome in many Years; nay, shall cease to swell at a certain Period, and ever after continue in that state without any notable disadvantage; though this last Case very rarely happens: In proportion as it enlarges it becomes more tense, and then is said to be transparent, indeed the Transparency is made the chief Criterion of the Distemper, it being constantly advis'd to hold a Candle on one side of the *Scrotum*, which it is said will shine through to the other, if there be Water: But this Experiment does not always answer, because sometimes the *Scrotum* is very much thicken'd, and the

Water

Water itself not transparent; so that to judge positively if there be a Fluid, we must be guided by feeling a Fluctuation; and tho' sometimes we do not perhaps evidently perceive it, yet we may be persuaded there is a Fluid of some kind, if we are once assur'd that the Distension of the *Tunica Vaginalis* makes the Tumour, which is to be distinguish'd in the following manner.

IF the Intestine, or *Omentum*, form the Swelling, they will be soft and pliable, (unless inflamed) uneven in their Surface, particularly the *Omentum*, and both of them extend themselves up from the *Scrotum* quite into the very *Abdomen*; whereas in the *Hydrocele*, the Tumour is tense and smooth, and ceases before or at its Arrival to the Rings of the Abdominal Muscles; because the upper Extremity of the *Tunica Vaginalis* terminates at some distance from the Surface of the Belly.

WHEN the Testicle is increas'd in its Size, the Tumour is rounder, and, if not attended with an Enlargement of the Spermatick Vessels, the Cord may be easily distinguish'd between the Swelling and *Abdomen*; but without this Rule of Distinction, either the Pain or the very great Hardness, will discover it to be a Disease of the Testicle.

As

As to the Cure of this Distemper by external Applications, or internal Means, after having tried upon a great variety of Subjects, most of the Medicines invented to that end, I have found but very little Satisfaction in the Event; for if by chance any one has mended under a Physical Regimen, it must be confess'd too, that there are some Instances of People recovering, who have so absolutely neglected themselves as not even to wear a Bag-Truss; on which account I should judge it adviseable to wait with Patience 'till the Tumour becomes troublesome, and then to tap it with a Lancet, which is rather less offensive to the *Tunica Vaginalis* than the Trocar. In opening with a Lancet it may possibly happen, the Orifice of the Skin shall slip away from the edge of the Tunick, and prevent the Egress of the Water; to obviate which Inconvenience you may introduce a Probe, and by that means secure the exact Situation of the Wound. It is spoke of as an easy thing to hold the Testis with the left Hand, while we make the Puncture with the right, but when the *Tunica Vaginalis* is very tense it cannot well be distinguished, however I think there is no danger in wounding it, if you open the inferior part of the *Scrotum*, and not with too long a Lancet.

During

During the Evacuation, the *Scrotum* must be regularly press'd; and after the Operation a little Piece of dry Lint and sticking Plaister are sufficient.

THIS Method of Tapping is call'd *The Palliative Cure*; not but that it does now and then prove an absolute one. To prevent the Recurrence of this Disease, Surgeons prescribe the making a large Wound, either by Incision or Caustick, that upon healing it afterwards, the Firmness and Contraction of the Cicatrix may bind up the relaxed lymphatick Vessels, and obstruct the further preternatural Effusion of their Contents: But by what I have seen of this Practice, it is attended with so much danger, that notwithstanding its success in the end, I believe whoever reads the following Cases will be apt to discard the Method, and abide rather by the Palliative Cure.

C A S E I.

A. B. aged 44, a strong Man, never in his Life having been subject to any other Infirmity, put himself under my Care for the Relief of a *Hydrocele* on the left side of the *Scrotum*.

December 3, 1733, I discharged the Water, by making an Incision through the Teguments about

about four Inches long. Towards Night he grew feverish, got no rest; the *Scrotum* and Testicle on that side beginning to inflame, and the capillary Arteries (dilating) to bleed freely. He was seized too with a violent Pain in his Back, which was in a great measure remov'd by suspending the *Scrotum* with a Bag-Truss.

FROM the 3d to the 7th, continued in a most dangerous Condition, when the Fever tended to a Crisis, by the Suppuration of both Wound and Testicle.

FROM the 7th to the 24th, he daily acquired Strength; but the Discharge from the Testicle increasing, and the Sinus penetrating now very deep towards the *Septum Scroti*, I opened the Body of the Testicle the whole length of the Abscess.

FROM the 24th, the Discharge lessen'd surprisingly, so that in six Days the Surface of the greatest part of the Testicle united with the *Scrotum*, and there remain'd only a superficial Wound, which was intirely cicatris'd on Jan. 10, 1733-4.

March 31, 1737, he continued in perfect Health.

CASE II.

IN the Year 1733, I made an Incision thro' the *Scrotum* and *Tunica Vaginalis* of a Boy about eight Years of age, who narrowly escaped with his Life; but the Symptomatick Fever terminating at last in an Abscess of the *Scrotum*, it prov'd his Cure, though with some trouble, in a few Weeks.

CASE III.

A. C. aged 37, of a very hale habit of Body, had complained of a Tumour on one side of the *Scrotum*, which continuing to enlarge for six Years, he apply'd to a Surgeon, who laid a small Caustick on the upper part of it, and opening the Eschar, empty'd near three Pints of Water; but he relapsing soon after this, I undertook the absolute Cure.

December 15, 1736, I laid on the anterior and upper part of the *Scrotum* a Caustick about six Inches long, and one broad.

December 16, by a small Puncture through the Eschar, I emptied above a Quart of Water.

FROM the 17th to the 24th, he continued in a great deal of Pain, not only in the Part, but in his Back and Loins, and had very little rest;

rest; the *Scrotum* on that side became exceedingly inflam'd and thicken'd, the symptomatick Fever running very high, without any signs of the Digestion of the Wound.

ON the 24th at night he grew a little easier, and continued so 'till the 29th, when the Slough separated; but the Wound retained still a bad Aspect, no Granulations appearing on its Surface.

FROM *Decemb.* 29, to *Jan.* 5, he remained in the same state.

FROM the 5th to the 13th, the Swelling and Pain rather increas'd, and that night he was seized with an Ague Fit, which return'd every other day twice more.

FROM the 17th to the 26th, the Ague being stopt, he began to alter much for the better, two Imposthumations on the *Scrotum* being in this interim opened.

BY *Feb.* 2, the Pain was quite gone, the Tumour very much sunk, and the Induration softened.

IN a very few days after, the Wound cicatrized, and on *Feb.* 24, I left him in perfect Health, and free from any complaint.

HAVING in the preceding Cases been threatened with the Death of the Patients, I tried the following Experiment, upon the Reputation

tion of its having been done with Success by others.

C A S E IV.

A. D. aged Forty-two, had for near four Years been troubled with a *Hydrocele* on one side, for which I had tapp'd him about a dozen times, taking away near a Pint of clear Water each Operation.

Jan. 3, 1736-7, after having emptied the *Tunica Vaginalis*, I injected an Ounce of Spirit of Wine; in the instant he complained of great Pain, which continued to increafe, and the next Day the Teguments were very much augmented in their bulk and thickness.

Jan. 7, the Tension became violently painful, and perceiving a Fluctuation, I made a Puncture, and he voided about half a Pint of Water, very deeply tinged with Blood, but without any Flavour of the Spirits to be distinguish'd by the Smell: This gave him some Ease, but the Inflammation and Thickness continued a whole Month, and then terminated in two Abscesses on the forepart of the *Scrotum*, which I open'd the 7th of *February* following, and on their Discharge the whole Tumour subsided, leaving a firm Cicatrix and absolute Cure of that Disorder.

SOME-

SOMETHING fimilar to the Circumftance of *A. D.*'s bloody Water is the Cafe of another Perfon who was under my care: He had at confiderable intervals of time been often tapp'd, difcharging that fort of ferous Water the *Tunica Vaginalis* for the moft part yields; at laft it became tinged with Blood, and every time grew more bloody than the other: The fourth Difcharge of this kind was attended with a remarkable Hæmorrhage, and terminated in an abfolute Cure; no figns of a Relapfe appearing fome Months after, as I had an opportunity to inform myfelf.

To the Cafes above recited I could add ftill more that have fallen within my Knowledge fince the time I made thefe Obfervations; particularly two, attended with Inflammation and Abfcefs, from the mere Puncture of the Lancet; both of which terminated in an abfolute Cure. It may be remark'd however of thefe two, that one was attended with a thickened Tunick, and the Water bloody; and in the other the Coat was thickened, and the *Epididymis* enlarged and indurated from a former Gonorrhœa.

I WOULD not however be underftood from this Catalogue of Misfortunes, that the Operation is never performed with Safety; a few Examples

Examples I have known in its favour, but by no means enough to balance the bad Effects of it.

'Tis worth observing, that upon examination of the several *Hydrocele's* after their Cure, it appeared evidently it was wrought by an universal Adhesion of the Testicle to the *Tunica Vaginalis*, and again of that Coat to the Parts enveloping it; from which Observation it will not be difficult to conceive how it happens, that Discharges of bloody Water work a Cure; since Inflammations of Membranes almost perpetually produce Adhesions of the neighbouring Parts, and these Discharges are no other than a mixture of Blood with the Water from the ruptur'd Vessels of the Inflamed Tunick.

It has been suggested that probably the exposing the *Tunica Vaginalis* to the Air, might occasion the abovemention'd Disorders; but besides that the Case of the injected *Sp. Vin.* the Case of the Caustick and the two Punctures, are sufficient Answers to that Opinion, the Instances I have seen of the whole *Scrotum* separating in a Gangrene from the *Tunica Vaginalis*, and leaving it naked a great many Days without any ill effect, put it out of dispute that 'tis the mere Inflammation of the Tunick produces the Danger. I have castrated several Men, whose schirrous

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Testicles

Testicles were accompanied with a *Hydrocele*, but the whole *Tunica Vaginalis* being carried off by the Operation, they all recover'd without any bad Symptoms.

I SHALL finish this Chapter with a further Remark on the suppos'd variety of *Hydrocele's*. Besides the imaginary one already specified between the *Scrotum* and inferior Membranes, there is mention made of a Species of Dropsy between the *Cremaster Muscle* and *Tunica Vaginalis*, call'd the *Encysted Hydrocele*: But I judge it more likely to be within-side the Coat, which adhering in different places to the Spermatick Cord, may form a Cyst or two between the Adhesions, of which an Instance has fallen under my own Examination. Indeed if we reflect on the Cause of a Dropsy of this Part, we must necessarily confine it to the Inside of the Membrane, where only is that order of Vessels which are the Subject of the Disease. The Dropsy of the *Testis* itself is the last suppos'd Species, but it's what I have never seen; and from the Analogy of the *Testis* to the Structure of other Glands, that are not pretended to become Dropsical, I am suspicious there is no such Distemper.





C H A P. X.

Of CASTRATION.

THIS is one of the most melancholy Operations in the Practice of Surgery, since it seldom takes place but in Disorders into which the Patient is very apt to relapse, viz. those of a Schirrus, or Cancer, for under most of the Symptoms described as rendering it necessary, it is absolutely improper; such as a *Hydrocele*, Abscess of the *Testis*, an increasing Mortification, or what is sometimes understood by a *Sarcocoele*; of which last it may not be amiss to say a Word. In the utmost Latitude of the meaning of this Term, 'tis receiv'd as a fleshy Swelling of the Testicle itself, call'd likewise *Hernia Carnosa*; or in some Inlargements, such as in a Clap, more frequently *Hernia Humoralis*; but generally speaking is consider'd as a fleshy Excrecence form'd on the Body of the *Testis*, which becoming exceeding hard and tumefied, for the most part is suppos'd to demand Extirpation, either by burning away the Induration, or amputating the Testicle: But this Maxim too precipitately receiv'd, has, I apprehend,

very much misguided the Practitioners of Surgery.

IN order to conceive better of the Distinction I'm going to make, it must be remembred, that what is call'd the Testicle, is really compos'd of two different parts; one Glandular, which is the Body of the *Testis* itself; and one Vascular or Membranous, known by the name of *Epididymis*, which is the beginning of the *Vas Deferens*, or the Collection of the excretory Ducts of the Gland.

Now it sometimes happens that this Part is tumefied, independent of the Testicle, and feeling like a large adventitious Excrescence, answering very well to the Idea most Surgeons form of a *Sarcocoele*; but not being aware of the different Nature and Texture of the *Epididymis*, they have frequently confounded its Disorders with those of the Testicle itself, and equally recommended Extirpation in the Induration of one or the other. But without tiring the Reader with particular Histories of Cases relating to this Subject, I shall only say, That from diligent Enquiry I have collected, that all Indurations of the glandular part of the Testicle not tending to Inflammation and Abscess, generally, if not always, lead on to Schirrus and Cancer; whereas those of the *Epididymis* seldom or never do. It is true, in spite of
intern

internal or external Means, these last often retain their Hardness, and sometimes suppurate, but however without much danger in either Case.

'TWILL not be hard to account for this difference of Consequences from Tumours of seemingly one and the same Body, when we reflect how much it is the nature of cancerous Poisons to fix upon Glands, and how different the *Epididymis* is from a Gland, though so nearly in the neighbourhood of one.

I WOULD not have it supposed from what I have said, that the *Epididymis* never becomes Cancerous; I confess it may, so may every part of the human Body: But I advance, that it rarely or never is so but from an Affection of the Glandular Part of the Testicle first, which indeed seldom fails to taint, and by degrees to confound it in such manner as to make one Mass of the two.

BEFORE we castrate, it is laid down as a Rule to inquire whether the Patient has any Pain in his Back, and in that Case to reject the Operation, upon the reasonable Presumption of the Spermatick Vessels being likewise diseased; but we are not to be too hasty in this Determination; for the mere weight of the Tumour stretching the Cord, will sometimes create the Complaint. To learn the Cause then of this

Pain in the Back, when the Spermatick Cord is not thickened, let your Patient be kept in bed and suspend his *Scrotum* in a Bag-Truss, which will relieve him if disordered by the weight only; but if the Spermatick Cord is thickened or indurated, which Disease, when attended with a Dilatation of the Vessels of the *Scrotum*, is described by the *Latins* under the Name of *Ramex*, (though it is more now known by the *Greek* Appellations *Circocele* and *Varicocele*) the Case is desperate and not to be undertaken.

BUT supposing no Obstacle in the way to the Operation, the Method of doing it may be this: Lay your Patient on a square Table of about three Foot four Inches high, letting his Legs hang down, which, as well as the rest of his Body, must be held firm by the Assistants. Then with a Knife begin your Wound above the Rings of the *Abdominal* Muscles, that you may have room afterwards to tie the Vessels, since for want of this Caution Operators will necessarily be puzzled in making the Ligature: then carrying it through the *Membrana Adiposa*, it must be continued downward, the length of it to be in proportion to the size of the Testicle. If it is very small, it may be dissected away without taking any part of the *Scrotum*; but I am not very fond of this Method, because so much

loose

loose flabby Skin is apt to form Abscesses afterwards, and very frequently grow callous. If the Testicle, for instance, weighs twenty Ounces; having made one Incision about five Inches long, a little circularly, begin a second in the same Point as the first, bringing it with an opposite Sweep to meet the other in the inferior Part, in such a manner as to cut out the shape of an Oval, whose smallest Diameter shall be two Inches: After this, dissect the body of the Tumour, with the piece of Skin on it from the *Scrotum*, first taking up some of the Blood-Vessels if the Hæmorrhage is dangerous. Then pass a Ligature round the Cord, pretty near the *Abdomen*, and if you have space between the Ligature and Testicle, a second about half an Inch lower, to make the stoppage of Blood still more secure. The Ligatures may be tied with what is call'd the *Surgeon's Knot*, where the Thread is pass'd through the Ring twice. This done, cut off the Testicle a little underneath the second Ligature, and pass a Needle from the Skin at the lower part of the Wound through the Skin at the upper part, in such manner as to envelope in some degree the sound Testicle, which will greatly facilitate and quicken the Cure.

, I ONCE castrated a Man whose Testicle weighed above three Pounds, where some of the Vessels were so exceeding varicous and dilated as nearly to equal the size of the Humeral Artery; however, I took up two or three of the most considerable, and pursued the Operation, cutting away near three fourths of the Skin, by which means I avoided a dangerous Effusion, as by dividing the Vessels before they were much ramified, I had fewer Ligatures to make: The Success answer'd the Design, and the Patient surviv'd the Operation and healing of the Wound, but the cancerous Humour falling on his Liver some time after, destroy'd him. In large Tumours, such as the last I have mention'd, it is very much to be advis'd to cut away great part of the Skin; for besides that the Hæmorrhage will be much less in this Case, and the Operation greatly shorten'd; the Skin by the great Distension having been render'd very thin, will great part of it, if not taken away, sphacelate, and the rest be more prone to degenerate into a cancerous Ulcer.

IT may be observ'd I do not, in order to avoid wounding the Spermatick Vessels, recommend pinching up the Skin before the Incision, and afterwards thrusting the Fingers
between

between the *Membrana Adiposa* and the Testicle, to tear the one from the other; the first is not dextrous, and the other is cruel, and both of them, in my opinion, are calculated to prevent what there is little or no danger of.



C H A P. XI.

Of the P H Y M O S I S.

TH E *Phymosis* signifies no more than such a Straightness of the Prepuce, that the Glans cannot be denuded, which if it becomes troublesome so as to prevent the Egress of the Urine, or conceal under it Chancres, or foul Ulcers, quite out of the reach of Application, is to be cut open. It sometimes happens that Children are born imperforate, in which case a small Puncture, dress'd afterwards with a Tent, effects a Cure: But this Operation is chiefly practis'd in venereal Cases, in order to expose Chancres either on the Glans or withinside the Prepuce itself: And here, if the Prepuce is not very callous and thick, a mere Incision will answer, which may be made either with the Scissars, or by slipping

slipping a Knife between the Skin and Glans to the very Extremity, and cutting it up. The last Method is more easy than that of the Scissars, but it is much safer to make the Wound on one side the Prepuce than upon the upper Part, for I have sometimes seen the great Vessels on the *Dorsum Penis* afford a terrible Hæmorrhage, which may be avoided by following this Rule.

IF the Prepuce is very large and indurated, the Opening alone will not suffice, and it is more adviseable to take away the Callosity by Circumcision, which must be performed with a Knife; and if the Artery bleeds much, it must be taken up with a small Needle and Ligature.



C H A P. XII.

Of the PARAPHYMOSIS.

THE *Paraphymosis* is a Disease of the *Penis*, where the Prepuce is fallen back from the Glans, and cannot be brought forwards to cover it: There are a great many whose *Penis* is naturally thus form'd, but without any Inconvenience; so that since the time of the *Romans* (some of whom thought

indecent to have the Glans bare) it has not been usual, as I can find, to perform any Operation upon that Account; but we read the several Proceſſes of it deſcribed very particularly by *Ceſus*, who does not ſpeak of it as an uncommon thing. Moſt of the Inſtances of this Diſtemper are owing to a venereal Cauſe, but there are ſome where the Prepuce is naturally very tight, which take their riſe from a ſudden Retraction of it, and immediate enlargement of the Glans preventing its return. Sometimes it happens the Surgeon ſucceeds in the Reduction immediately, by compreſſing the extremity of the *Penis* at the time he is endeavouring to advance the Prepuce; if he does not, let him keep it ſuſpended, and attempt again, after having ſomented, and uſ'd ſome emollient Applications; But if from the Contraction below the *Corona Glandis* there is ſo great Stricture as to threaten a Gangrene, or even if the *Penis* is much enlarged by Water in the *Membrana Reticularis*, forming Tumours, call'd *Crystallines*, three or four ſmall Inciſions muſt be made with the point of a Lancet into the Stricture and *Crystallines*; according to the direction of the *Penis* itſelf, which in the firſt Caſe will ſet free the Obſtruction, and in the other

other evacuate the Water: The manner of dressing afterwards must be with Fomentations, Digestives, and the *Theriaca Londinensis* over the Pledgits.



C H A P. XIII.

Of the PARACENTESIS.

THIS Operation is an Opening made into the *Abdomen*, in order to empty any quantity of extravasated Water collected in that Species of Dropsy call'd the *Ascites*; but as there is much more difficulty in learning when to perform, than how to perform it, and indeed in some Instances requires the nicest Judgment; I shall endeavour to specify the Distinctions that render the undertaking more or less proper.

THERE are but two kinds of Dropsy, the *Anasarca*, call'd also *Leucophlegmacy*, when the extravasated Water swims in the Cells of the *Membrana Adiposa*; and the *Ascites*, when the Water possesses the Cavity of the *Abdomen*: In the first kind, the Water is clear and limpid, but in the second a little grosser, very often gelatinous and corrupted, and sometimes even mix'd

mix'd with fleshy Concretions. I do not mention the *Tympany* or flatulent Dropfy of the *Abdomen*; nor have I in the Chapter of *Hernia's* spoke of the *Hernia Ventosa*, it being certain that the *Ascites* and *Bubonocoele* have generally been mistaken for those Diseases, though there are some few Instances where an enormous Tumour of the *Abdomen* arises from excessive Flatulencies, and Distensions of the Intestines.

IT is of no great consequence in the Practice of Physick or Surgery, whether the Water is discharged by a Rupture of the Lymphaticks, or a Transudation through the Pores of their relaxed Coats, since the Fact is establish'd, that they have a Power sometimes of absorbing the Fluid, lying thus loose, and conveying it into the course of the Circulation; after which it is often totally carry'd off by some Emunctory of the Body. The great disposition there is in Nature to fix upon the Kidneys and Glands of the Intestines for this end, has put Physicians upon promoting it by Catharticks and Diureticks, which sometimes entirely carry off the Distemper. If any one should doubt of the possibility of a Cure when the Water is extravasated, let him inject through a small Opening into the *Thorax* or *Abdomen* of a Dog, a Pint of warm Water,

Water, and upon Dissection some few Hours after, he shall not find one Drop left there, which puts out of dispute this power of Absorption: But indeed though we do not much attend to it, 'tis by this very Act the Circulation is carried on regularly, with respect to some, if not all the Secretions, which would overload their Receptacles, if they were not thus taken up again. The Example serving for Illustration, may be the Circulation of the aqueous Humour of the Eye, which no one questions, is an extravasated Fluid.

THE Operation of Tapping is seldom the Cure of the Distemper, but Dropsies, which are the consequence of a mere Impoverishment of the Blood, are less likely to return than those that are owing to any previous Disorder of the Liver, and it is not uncommon for Dropsies that follow Agues, Hæmorrhages and Diarrhœa's to do well; whereas in such as are complicated with a schirrous Liver, there is hardly an Example of a Cure.

THE Water floating in the Belly is by its Fluctuation to determine whether the Operation is adviseable, for if by laying one Hand on any Part of the *Abdomen* you cannot feel an Undulation from striking on an opposite Part with the other, it is to be presum'd there

will

will be some obstacle to the Evacuation. It sometimes happens that a great quantity, or almost all the Water is contain'd in little Bladders, adhering to the Liver and the Surface of the *Peritonæum*, known by the name of *Hydatids*, and the rest of it in different siz'd ones, from the degree of a *Hydatid* to the size of a Globe holding half a Pint, or a Pint of Water. This is call'd the Incysted Dropsy, and from the Smallness of its Cysts, makes the Operation uselefs, but is not difficult to be distinguish'd, because there is not a Fluctuation of the Water unless it is complicated with an Extravasation.

WHEN the Fluctuation is hardly perceptible, except the Teguments of the *Abdomen* are very much thicken'd by an *Anasarca*, in all probability the Fluid is gelatinous: I have had Instances where it was too viscid to pass through a common Trocar, on which account it is proper to be furnished with a couple of the size describ'd in the Copper-Plate. I once tapp'd a Person when the Fluid would not pass even through the large one; so to ease him from the Distension he labour'd under, I dilated the Orifice with a large Sponge-Tent, and afterwards extracted a prodigious quantity of distinct concreted *Hydatids*, differing in

in nothing, as I could discover, from the nature of a *Polypus* form'd in the Nose.

T H E R E is another kind of Dropsy, which for the most part forbids the Operation, and is peculiar to Women, being seated in the Body of one or both Ovaries. There is, I believe, no example of this Species but what may be known by the Hardness and Irregularity of the Tumour of the *Abdomen*, which is nearly uniform in the other Cases.

W H E N the Ovary is Dropsical, the Water is generally deposited in a great number of Cells form'd in the Body of it, which Circumstance makes the Fluctuation insensible, and the Perforation useless, though sometimes there are only one or two Cells, in which case, if the Ovary is greatly magnified, the Undulation will be readily felt, and the Operation be advisable. I once tapp'd a Gentlewoman in this Circumstance, whose Ovary upon the Puncture yielded but half a Pint of Water, but being still persuaded by the feel, there was a large Cyst, I tapp'd her in another Part, and drew away near a Gallon: I had an Opportunity after her Death to be convinc'd of this Fact by examining the Body.

W H E N the *Ascites* and *Anasarca* are complicated, it is seldom proper to perform the
Opera-

Operation, since the Water may be much more effectually evacuated by Scarifications in the Legs than by Tapping.

UPON the Supposition nothing forbids the Extraction of the Water, the manner of Operating is this: Having plac'd the Patient in a Chair of a convenient height, let him join his Hands so as to press upon his Stomach, then slipping the Trocar in Oil, you stab it suddenly through the Teguments, and withdrawing the Perforator, leave the Waters to empty by the Canula: the *Abdomen* being, when fill'd, in the circumstance of a Bladder distended with Fluid, would make it indifferent where to wound, but the Apprehension of hurting the Liver, if it happens to be much enlarged, has induc'd Operators rather to choose the left side, and generally in that Part which is about three Inches obliquely below the Navel: If the Navel protuberates you may make a small Puncture with a Lancet through the Skin, and the Waters will be readily voided by that Orifice, without any danger of a *Her-*
nia succeeding, as is apprehended by many Writers: The Surgeon neither in opening with the Lancet, nor wounding with the Trocar, need fear injuring the Intestines, since they are too much confined by the Mesen-

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tery,

tery, to come within reach of Danger from these Instruments; but it sometimes happens that when the Water is almost all emptied, it is suddenly stopp'd by the Intestine or *Omentum* pressing against the end of the Canula, in which case you may push them away with a Probe: During the Evacuation your Assistants must keep pressing on each side of the *Abdomen*, with a force equal to that of the Waters before contain'd there; for by neglecting this Rule the Patient will be apt to fall into Faintings, from the weight on the great Vessels of the *Abdomen* being taken off, and the sinking of the Diaphragm succeeding; in consequence of which more Blood flowing into the inferior Vessels than usual, leaves the superior ones of a sudden too empty, and thus interrupts the regular Progress of the Circulation. To obviate this Inconvenience, the Compression must not only be made with the Hands during the Operation, but be afterwards continued by swathing the *Abdomen* with a Roller of Flannel, about eight Yards long, and five Inches broad, beginning at the bottom of the Belly, so that the Intestines may be bore up against the Diaphragm: You may change the Roller every Day 'till the third or fourth Day, by which time the
several

Several Parts will have acquir'd their due Tone. For the Dressing, a piece of dry Lint and Plaister suffice, but between the Skin and Roller it may be proper to lay a double Flannel a Foot square, dip in Brandy or Spirits of Wine.

THIS Operation, though it does not often absolutely cure, yet it sometimes preserves Life great many Years, and even a pleasant one, especially if the Waters have been long collecting; I have known several Instances of people being tap'd once a Month, for many Years, who felt no Disorder in the Intervals, till towards the time of the Operation, when the Distension grew painful; and there are Instances where the Patient has not relaps'd after. Upon the whole, there is so little Pain or Danger in the Operation, that in consideration of the great Benefits sometimes receiv'd from it, I cannot but recommend it as exceedingly useful.

P L A T E III.

The EXPLANATION.

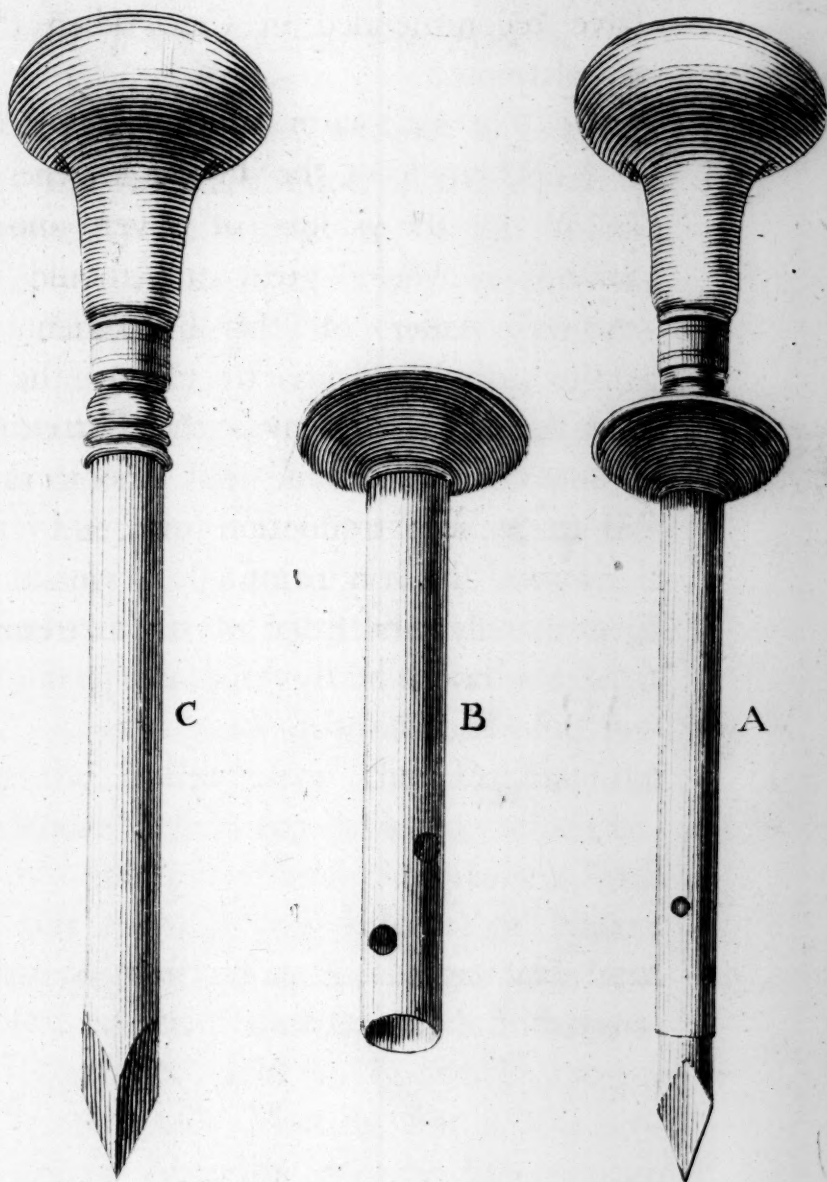
A. A Trocar of the most convenient size for emptying the *Abdomen*, when the Water is not gelatinous. It is here represented with the

Perforator in the Canula, just as it is plac'd when we perform the Operation.

B. The Canula of a large Trocar, which I have recommended in Cases where the Water is gelatinous.

C. The Perforator of the large Trocar.

The Handle of the Trocar is generally made of Wood, the Canula of Silver, and the Perforator of Steel; great care should be taken by the Makers of this Instrument, that the Perforator should exactly fill up the Cavity of the Canula; for unless the Extremity of the Canula lies quite close and smooth on the Perforator, the Introduction of it into the *Abdomen* will be very painful; to make it slip in more easily, the Edge of the Extremity of the Canula should be thin and sharp; and I would recommend that the Canula be Steel, for the Silver one being of too soft a Metal, becomes jagged or bruis'd at its Extremity with very little use. After the Operation, the Canula must be wip'd clean and dry, by drawing a Slip or two of Flannel through it; otherwise when the Perforator is put into it they will both grow rusty.



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C H A P. XIV.

Of the FISTULA IN ANO.

THE *Fistula in Ano*, without any regard to the strict Definition of the Word, is generally understood to be an Abscess running upon or into the *Intestinum Rectum*; though an Abscess in this Part, when once ruptur'd, does generally, if neglected, grow callous in its Cavity and Edges, and become at last what is properly call'd a *Fistula*.

THAT the *Anus* is so often expos'd to this Malady in any Crisis of the Constitution, is chiefly imputed to the depending Situation of the Part; but what very much conduce to it likewise, are the great quantities of Fat surrounding the *Rectum*, and the Pressure the *Hæmorrhoidal Vessels* are liable to, which being sustain'd upon very loose Membranes, will be less able to resist any Effort that Nature shall exert to sling off a Surcharge, and from one step to another, that is, from Inflammation to Suppuration, lead on to the Distemper we are treating of. That the Fat is the proper Subject of Abscesses, may be learn'd from

an Inflammation of the Skin affecting the *Membrana Adiposa*, and producing Matter there, in which case a Suppuration frequently runs from Cell to Cell, and in a few days lays bare a great quantity of Flesh underneath, without affecting the Flesh itself: Nay, I think it may be doubted, whether in those Abscesses that are esteem'd Suppurations of the Muscles, the Inflammation and Matter are not absolutely first formed in this Membrane, where it is insinuated between the Interstices of their Fibres.

THE Piles, which are little Tumours form'd about the Verge of the *Anus*, immediately within the *Membrana interna* of the *Rectum*, do sometimes suppurate, and become the Forerunners of a large Abscess; also external Injuries here, as in every other part of the Body, may produce it; but from whatever Cause the Abscess arises, the manner of operating upon it will be according to the Nature and Direction of its Cavity.

IF the Surgeon has the first Management of the Abscess, and there appears an external Inflammation upon one side of the Buttock only, after having waited for the proper Maturity, let him with a Knife make an Incision the whole length of it, and in all probability,

even

even though the Bladder be affected, the largeness of the Wound, and the proper application of Dossils lightly press'd in, will prevent the Putrefaction of the Intestine, and make the Cavity fill up like Imposthumations of other Parts.

IF the *Sinus* is continued to the other Buttock almost surrounding the Intestine, the whole course of it must be dilated in like manner, since in such spongy Cavities a Generation of Flesh cannot be procur'd but by large Openings; whence also, if the Skin is very thin, lying loose and flabby over the *Sinus*, it is absolutely necessary to cut it quite away, or the Patient will be apt to sink under the Discharge, which in the Circumstance here described, is sometimes excessive. By this Method, which cannot be too much recommended, it is amazing how happy the Event is likely to be; whereas from neglecting it, and trusting only to a narrow Opening, if the Discharge does not destroy the Patient, at least the Matter by being confined, corrupts the Gut, and insinuating itself about it, forms many other Channels, which running in various Directions, often baffle an Operator, and have been the cause of a Fistula being so generally esteemed very difficult of Cure.

H E R E I have consider'd the Imposthuma-
tion as possessing a great part of the Buttock;
but it more frequently happens that the Mat-
ter points with a small extent of Inflamma-
tion on the Skin, and the Direction of the *Sinus*
is even with the Gut: In this Case, having
made a Puncture, you may with a Probe learn
if it has penetrated into the Intestine by pas-
sing your Finger up it, and feeling the Probe
introduc'd through the Wound into its Cavity,
though for the most part it may be known by
a Discharge of Matter from the *Anus*. When
this is the state of the Fistula, there is no he-
sitation to be made, but immediately putting
one Blade of the Scissars up the Gut, and the
other up the Wound, snip the whole length
of it. This Process is as adviseable when the
Intestine is not perforated, if the *Sinus* is nar-
row, and runs upon or very near it; for if the
Abscess be tented, which is the only way of
dressing it while the external Orifice is small,
as I have here suppos'd, it will almost certain-
ly grow callous; so that the surest means of
Cure will be opening the Gut, that proper
Applications may be laid to the bottom of the
Wound. However it should be well attended
to, that some *Sinus*'s pretty near the Intestine,
neither run into nor upon it, in which case
they

they must be open'd, according to the course of their Penetration. There are abundance of Instances where the Intestine is so much ulcerated as to give free issue to the Matter of the Abscess by the *Anus*; but I believe there are none where there is not by the Thinness and Discolouration of the Skin, or an Induration to be perceiv'd through the Skin, some mark of its Direction, which, if discover'd, may be open'd into with a Lancet, and then it becomes the same Case as if the Matter had fairly pointed.

IF the *Sinus's* into and about the Gut are not complicated with an Induration, and you can follow their course, the mere opening with Scissars, or a Knife guided on a Director, will sometimes suffice; but it is generally safer to cut the piece of Flesh surrounded by these Incisions quite away, and when it is callous absolutely necessary, or the Callosities must be wasted afterwards by Escharotick Medicines, which is a tedious and cruel Method of Cure.

WHEN the Fistula is of long standing, and we have choice of time for opening it, a Dose of Rhubarb the Day before the Operation will be very convenient, as it not only will empty the Bowels, but also prove an Astringent

gent for a while, and prevent the Mischief of removing the Dressings in order to go to stool.

IT sometimes happens that the Orifices are so small, as not to admit the entrance of the Scissars, in which case Sponge-Tents must be employ'd for their Dilatation.

IN performing these Operations on the *Anus*, I do not think any Instrument so handy as the Knife and Scissars; almost all the others that have been invented to facilitate the Work, are not only difficult to manage, but more painful to the Patient: Nor do I caution against cutting the whole length of the Sphincter, Experience having shewn it may be done with little danger of an Incontinence of Excrement; and in fact the Muscle is so short, that it must generally be done in Dilatations of the Intestine.

THE worst Species of Fistula is that communicating with the Bladder, where the *Prostate Gland* is primarily concerned. This generally takes its rise from a former Gonorrhoea and appears externally first in *Perinæo*, and afterwards increasing more towards the *Anus*, bursts out in various Orifices, through the Skin, which soon becomes callous and rotten, and the Urine passing partly through these Orifices, will often

excite

excite as much Pain, and of the same kind, as a Stone in the Bladder.

HAVING met with none of these Instances that I could not trace from a Clap, I have been induced in the trial of Cure, to practise Salivating, which assists very much in healing the Wound after the Operation. The manner of opening this Fistula, is by cutting out the callous Skin and Eminences down as deep as the *Accelerator Urinæ*, and somewhat deeper between that Muscle and *Erector Penis*, if the Indurations lie there. The Operation is severe, but very well rewards the Pain. It is not to be expected however, if there are many *Sinus's* into the Bladder, that they will all certainly be healed; but they will be reduced to one or two, almost all the Urine come by the *Urethra*, and the Pain be quite remov'd, of which Success I have had two or three remarkable Instances under my Care.

THE particular Method of Dressing these Abscesses of the *Anus* may be learn'd in the Introduction.





C H A P. XV.

Of the Puncture of the PERINÆUM.

THIS Operation is perform'd when the Bladder is under such a Suppression of Urine as cannot be relieved by any gentler Methods, nor by reason of the Obstruction in its Neck, or the *Urethra*, will admit of the Introduction of a Catheter. The manner of doing it, as described by most Writers, is by pushing a common Trocar from the place where the external Wound in the old way of cutting is made, into the Cavity of the Bladder, and so procuring the Issue of the Water through the Canula; but others refining upon this Practice, have ordered an Incision to be carried on from the same Part into the Bladder, and then to insinuate the Canula: But in my opinion, both the Methods are to be rejected, in favour of an Opening a little above the *Os Pubis*: For besides that it is not easy to guide the Instrument through the prostate Gland into the Bladder, the necessity of continuing it in a Part already very much inflam'd and thicken'd, seldom

to do mischief and even to produce a Mortification.

SOME time since, a Gentlewoman complain'd of a Difficulty of making Water, which she voided by Drops with excessive Pain, and soon after the Urinary Passage became totally obstructed. Having in vain attempted to pass the smallest Catheter I could get, I introduc'd my Finger into the *Vagina*, and felt a very hard Tumour about the Neck of the Bladder: The Patient had not voided any Water for five Days, and being in the utmost Agony, and as we judg'd within a few Hours of dying, I put in practice the Incision above the *Os Pubis*, making the Wound of the Skin about two Inches long, and that of the Bladder about half an Inch: Having emptied by this means a prodigious quantity of Water, I kept the Orifice open with a hollow Tent, 'till such time as the Tumour subsided, which with proper Medicines, it did by degrees, and in about six Weeks all her Water came the right way, and some time after she recover'd perfect Health.





C H A P. XVI.

Of the S T O N E.

STONY Concretions are a Disease incident to several parts of the Body, but I shall treat only of those form'd in the Kidneys and Bladder: Hitherto there has never been given any satisfactory Account of the Causes of this concreting Disposition in the Fluids, and though there may be some Propriety in considering the Sand of Urine in the same light as the Tartar of Wine, from their Similitude in several Experiments, yet we cannot infer from thence what does immediately produce it; at least it is not with any certainty to be imputed to a particular Diet or Climate, which however are the Causes commonly assign'd; since we see that in all Countries, and amongst all Ranks of People, as much among the sober as the luxurious, the Stone is a frequent Distemper; and though the great numbers cut at the Hospitals of *Paris*, where the Water of *Arcueil* is so remarkable for its quantity of Stone, seems to favour the Opinion of its being generated by
parti-

particular Fluids receiv'd into the Blood, yet I believe, upon enquiry, this famous Instance will not appear conclusive, since most of those Patients come from the Provinces, or distant Villages where that Water is not drank; and as to the Inhabitants of *Paris* itself, by what I was able to learn of the Surgeons there, the number of those afflicted with the Stone amongst them, is pretty nearly in the same proportion as in *London*: From which considerations, and the circumstance of so many more Children having the Stone than Men, one would be inclin'd to think the Disposition is much oftener born with us than acquired by any external means.

IT is certain the Urine generally abounds with Matter proper to compose a Stone, and perhaps if it could grow cold in the Bladder, it would always deposite the Matter there, as it does on the sides of the Chamber-pot, tho' the Coats of the Bladder being cover'd with a Mucilage, makes them more unfit than the sides of the Pot to attract the stony Particles; but we see when once a hard Body is insinuated into the Bladder, it seldom fails to become the Nucleus of a Stone, whether it be a large piece of Gravel, a Needle, a Bullet, or any other firm extraneous Substance.

FROM

FROM the monstrous Increase of some Stones in a small time, and the Cessation of growth for many Years of others, we may be persuaded that the Constitution varies exceedingly at different times, with regard to these stony Separations, and from the Appearances of most Stones, when artfully saw'd through, we may gather that this Variation of Constitution does not shew itself only in the quantity of Gravel added to the Stone, but the quality of it also; so that a red uniform Stone of an Inch diameter, may perhaps at half that size have been a smooth white one, at a quarter, a brown Mulberry one, and so on at different times altering in its Species. Hence, (from the Apposition of different colour'd Gravel,) arises for the most part the laminated Appearance of a Stone; though sometimes the *Laminae* are very nearly of the same Colour and Composition, and in this case their Formation seems to be owing to the want of Accretion in the Stone for a certain time, during which, its Surface by rubbing against the Coats of the Bladder, and its Attrition from the Stream of Urine, becomes smooth and compact; so that when more fresh loose Gravel adheres to it, its different Density in that Part will necessarily make the Streaks we

See in a Section of the Stone, which are only the outside Surfaces of each *Lamina*.

THAT the ceasing to grow gives them this laminated Form, and not any particular Disposition in Sand to shoot into such a shape, is probable from the Examination of some other Stones, in which a great quantity of Gravel is first collected without any Nucleus, into a spongy uniform Mass, and after that is cover'd with several *Laminae*.

'TIS no wonder that Stones so generally form in the Kidneys, since the Disposition of the Urine will naturally shew itself as soon as it is separated into the *Pelvis*, that is, the stony Particles having as strong an Endeavour to unite with one another in the Kidneys as the Bladder, will consequently, from meeting first there, generally produce Gravel and Stone in that part.

SMALL Stones and Gravel are frequently voided without Pain, but sometimes they collect and become very large in the Kidneys, in which case a Fit of the Stone in that part is the Cure, from the Inflammation and Pain occasioning convulsive Twitches, which at last expel them: But in this Disease the Patient is very much relieved by several kinds of Remedies, such as the Mucilaginous, the Saponaceous,

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naceous, &c. some of which lubricate, and others both lubricate and stimulate. The Sand in passing through the *Ureters* is very much forwarded by the force of the Urine, which is so considerable, that I have seen a Stone that was obstructed in the *Ureter* in its first Formation, perforated quite through its whole length, and form a large Channel for the Stream of Urine. The *Ureters* being very narrow, as they run over the *Psoas* Muscle, and also at their Entrance into the Bladder, make the Movement of the Stone very painful and difficult in those Parts, but there is seldom so much trouble after the first Fit, for when once they have been dilated, they generally continue so: I have often seen them as big as a Man's Finger, but they have been found much larger.

WHEN once a Stone has acquir'd a moderate size in the Bladder, it usually occasions the following Complaints: Frequent Inclination to make Water, excessive Pain in voiding it drop by drop, and sometimes a sudden stoppage of it if discharged in a stream; after urinating great Torture in the *Glans Penis*, which lasts one, two, or three Minutes; and in most Constitutions the violent straining makes the *Rectum* contract, and expel its Excrements,

or if it be empty occasions a *Tenesmus*, which is sometimes accompany'd with a *Prolapsus Ani*; the Urine is often tinctur'd with Blood from a Rupture of the Vessels, and sometimes pure Blood itself is discharged; sometimes the Urine is very clear, but frequently there are great quantities of slimy Sediment deposited at the bottom of it, which is no other than a preternatural Separation of the Mucilage of the Bladder, but has been often mistaken for *Pus*, whence has arose an opinion that Ulcers of the Bladder are common, tho' in fact the Distemper is very rare.

THESE are the Symptoms of the Stone in the Bladder, yet by no means are they infallible, since a Stone in the *Ureter* or Kidneys, or an Inflammation of the Bladder from any other Cause, will sometimes produce the same effects; but if the Patient cannot urine except in a certain Posture, 'tis almost a sure sign the Orifice is obstructed by a Stone; if he finds Ease by pressing against the *Perinæum* with his Fingers, or sitting with that part upon a hard Body, there is little doubt to be made that the Ease is procur'd by taking off the weight of the Stone; or lastly, if with most of these Complaints he thinks he can feel it roll in his Bladder, it is hardly possible to be mistaken; however the

only sure Judgment to be form'd is from searching.

THAT we should not readily distinguish the Complaints of the Stone from many other Affections of the Bladder, is not very surprising, when we reflect that a Fit of the Stone is nothing but an Inflammation of its Coats, which though it be excited by the Stone, requires a Disposition in the Blood to produce it; for if the Complaints in a Fit were owing to the immediate Irritation of the Bladder, it should follow that the Stone being always the same, the Fit would be continual; but besides that all Patients have considerable Intervals of Ease, (often of many Months) except in those Cases where the Stone is either very large or pointed, there are Instances of some few happy Constitutions that have no Pain at all, even after having for a certain time suffered very much.

To prevent the Violence and frequent Returns of the Fits of the Stone, Bleeding and gentle Purging with Manna are beneficial, abstaining also from Malt-Liquors and excess of Eating and Drinking is very serviceable; but the Milk-Diet and Honey are the greatest Preventives not only of Inflammation, but perhaps sometimes too of the farther Accretion of the Stone.


FROM

FROM considering the Disorders of the Stone in this light, and the frequent Intervals of Ease that happen without the assistance of Medicine, we cannot wonder that so many Patients have believ'd the Stone dissolv'd when they have been under any particular Regimen, and that in all Ages there have been many People deceived for a length of time, by a suppos'd Dissolvent, tho' we have not hitherto known any safe one, 'till lately it has been discovered that Lime and Sope are often efficacious in that Case.



C H A P. XVII.

Of S E A R C H I N G.

 HE Patient being laid on a horizontal Table, with his Thighs elevated and a little extended, pass the Sound with the concave part towards you, 'till it meets with some resistance in *Perinaeo*, a little above the *Anus*, then turning it without much force, push it gently on into the Bladder, and if it meets with an Obstruction at the Neck, raise its extremity upwards by inclining the Handle of it towards you, or if it don't then slip in,

withdraw it a quarter of an Inch, and introducing your Fore-finger into the *Rectum*, lift it up, and it will seldom fail to enter: There is some Art in turning the Sound in the proper place of the *Urethra*, which Surgeons not vers'd in this Operation cannot so well execute, therefore they may pass the Instrument with the Concave side always towards the *Abdomen* of the Patient, observing the same Rule at the entrance into the Bladder, as in the other Method. The Cause of this Obstacle is frequently a small Projection of the Orifice of the Bladder in the *Urethra*, like that of the *Os Tincæ* in the *Vagina*, which occasions the end of the Sound to slip a little beyond it.

'TIS not to be suppos'd that by searching one can positively judge of the size and form of a Stone, and indeed the frequency of the Fits, and violence of the Symptoms are a better Rule to go by, though whoever shall think himself capable of distinguishing absolutely the difference of Stones even by these Circumstances, will sometimes be mistaken, since the frequency and violence of the Pain depend not always merely upon their Magnitude or Shape, and there are some Instances, where a Stone of six Grains weight has for several Months given more pain in one Person, than

than a much larger has in another, though no doubt *Cæteris paribus*, a large or a rough Stone is worse than a small or a smooth one.

THOUGH upon searching we are assur'd of a Stone in the Bladder, we are not, without further Inquiry, to operate immediately, since there are sometimes Obstacles that forbid the Operation, either absolutely, or only for a certain time; among these, that of greatest consequence is the Gravel or Stone in the Kidneys, which is known by the Pain in the Loins, Vomitings, Contractions of the Testicles, Numbness of the Thighs, and often by Matter which the Inflammation produces in the Kidneys. The Objections of less weight, and which frequently are remov'd, are a Fit of the Stone, a Cough, a Hæctick, and being emaciated by long Pain; excessive hot or cold Weather are likewise Hindrances; but in extremity of Danger, these last Considerations may be disregarded, though no doubt very hot Weather is more inconvenient and dangerous than cold, as lying a-bed is then more troublesome, and the Urine much falter.

DIFFERENCE of Age makes an extreme difference in Danger, Infants and young People almost always recovering; but still the Operation is adviseable on those advanced in

years, though it is not attended with near the same success. This Operation is perform'd four several ways, all which I shall describe with their particular Inconveniencies, that we may the more easily pitch upon that which has the least.

BEFORE we perform any of them, 'twill be proper to prepare the Patient with a gentle Purge the preceding Day, and a Clyster early in the Morning, which will be of great service in cooling the Body, and making some of the Operations less dangerous where the *Rectum* is liable to be wounded when full.



C H A P. XVIII.

Of the LESSER APPARATUS, or Cutting on the GRIPE.

THE most ancient way of cutting for the Stone is that describ'd by *Celsus*, and known by the name of *Cutting on the Gripe*; though since the time of *Johannes de Romanis*, it is also called, *Cutting with the Lesser Apparatus*, to distinguish it from his new Method, which on account of the many Instruments employ'd

employ'd in it, is call'd *Cutting with the Greater Apparatus*. The manner of doing the Operation is this. You first introduce the Fore-finger and Middle-finger of the left Hand, dipt in Oil, up the *Anus*, and pressing softly with your right Hand above the *Os Pubis*, endeavour to bring the Stone towards the Neck of the Bladder; then making an Incision on the left side of the *Perinæum*, above the *Anus*, directly upon the Stone, you turn it out through the Wound, either with your Fingers or a Scoop.

THIS way of Cutting was attended with many Difficulties, for want of proper Instruments to direct the Incision, and extract the Stone, when it lay beyond the reach of the Fingers, which in a large Bladder was frequently the Case; so that 'tis strange *Celsus* confin'd the Operation to the Age between Nine and Fourteen, since it is much easier to be perform'd in Infancy, than at those Years; and it plainly appears from his Account of it, that many died from the Violence done to the Bladder in endeavouring to bring the Stone forwards, though the Operators fail'd in their Attempt, and the Patients were not cut.

THE Wound of the Bladder in this Operation is made in the same Place as is now practis'd in the Lateral Method; but its being im-

impracticable on some Subjects, and uncertain on all others, has made it universally exploded so that no body now makes an Incision without the direction of a Staff, unless a Stone entirely prevents the Introduction of it, by pressing against and stopping up the Neck of the Bladder; and in this case, when we cut directly upon the Stone, it is much safer to push it back farther into the Bladder, and lay hold of it with the Forceps, than endeavour with the Scoop or Fingers to force it outwards, which Circumstance alone makes it different from *Celsus's* Method. It must be distinguish'd however, when I speak of pushing the Stone back, that I suppose it in the Neck of the Bladder; for it frequently happens that it lies at the Extremity of the *Urethra*, on the outside of the Bladder; in which case the Wound of the *Urethra* may be made large enough to turn it out with the Fingers, or the end of some slender Instrument



C H A P. XIX.

*Of the GREATER APPARATUS,
or the Old Way.*

THIS Method of Cutting, invented by *Johannes de Romanis*, and published by his Scholar *Marianus* in the Year 1524, has at different times, and with different People, varied considerably in some of its Processes, and particularly with regard to the use of certain Instruments. What I shall describe will be the manner in which it is now practis'd with all its Improvements.

HAVING laid the Patient on a square Horizontal Table, three Foot four Inches high, with a Pillow under his Head, let his Legs and Thighs be bent, and his Heels made to approach his Buttocks, by tying his Hands to the bottom of his Feet with a couple of strong Ligatures about two Yards long; and to secure him more effectually from struggling, pass a double Ligature under one of his Hams, and carry the four Strings round his Neck to the other Ham; then passing the Loop underneath it, make a Knot by threading one of the single Ends

Ends through the Loop: After this, the Thighs being widen'd from each other, and firmly supported by proper Persons, you introduce the Staff, having first dipt it in Oil, which must be held by your Assistant a little leaning on the left side of the Seam in *Perineæo*, and beginning the external Wound just below the *Scrotum*, (which must be held out of the way) you continue it downwards to within two Fingers breadth of the *Anus*, then leaving that Direction, you slip the Knife forwards in the Groove, pretty far into the Bulbous Part of the *Urethra*; or, as there is some danger of wounding the *Rectum* in the continuation of the Incision, you may turn the Knife with the back towards it, and make this part of the Incision from within outwards. Should a very large Vessel be cut, it will be adviseable to tie it before you proceed any farther in the Operation. When the Wound is made, slide the Gorget along the Groove of the Staff into the Bladder; and to do it with more safety, when the Beak of it is received in the Groove, 'twill be proper to take the Staff yourself in your left Hand; for if the Assistant, should unwarily, either incline the Handle of it too much towards you, or not resist enough to the force of the Gorget, it is very

pt to slip out of the Groove, between the *Rectum* and the Bladder, which Accident is not only inconvenient to the Operator for the present, but is attended for the most part with very bad Consequences. The Gorget being pass'd, dilate the *Urethra* and Neck of the Bladder with your Forefinger, and introduce the Forceps into the Bladder, keeping them shut till you touch the Stone, when you must grasp it with a moderate force, and extract it by pulling downwards towards the *Rectum*.



CHAP. XX.

Of the HIGH OPERATION.

THIS Method of Cutting for the Stone was first Publish'd in the Year 1561, by *Pierre Franco*, who in his Treatise of *Hernia's* says he once perform'd it on a Child with very good Success, but discourages the farther Practice of it. After him *Rossetus* recommended it with great zeal in his Book intitled *Partus Cæsareus*, printed in 1591; but he never perform'd the Operation himself. Monsieur *Toilet* makes mention of its having been

been tried in the *Hotel Dieu*, but without entering into the particular Causes of its Discontinuance, says only, that it was found inconvenient. About the Year 1719, it was first done in *England* by Mr. *Douglas*, and after him practis'd by others. The manner of performing it, with the Improvements made since *Franco's* Operation, is this.

THE Patient being laid on a square Table, with his Legs hanging off, and fastened to the sides of it by a Ligature pass'd above the Knee, his Head and Body lifted up a little by Pillows, so as to relax the Abdominal Muscles, and his Hands held steady by some Assistants; inject through a Catheter into the Bladder as much Barley-water as he can bear, which in a Man is often about eight Ounces, and sometimes twelve: For the easier doing this, an Ox's *Ureter* may be tied to the Extremity of the Syringe, and Handle of the Catheter, which being pliable, will prevent any painful motion of the Instrument in the Bladder.

THE Bladder being fill'd, an Assistant, in order to prevent the Reflux of the Water must grasp the *Penis* the moment the Catheter is withdrawn, holding it on one side in such a manner, as not to stretch the Skin of the *Abdomen*; then with a round-edged Knife make

An Incision about four Inches long, between the *Recti* and Pyramidal Muscles, through the *Membrana Adiposa*, as deep as the Bladder, bringing its Extremity almost down to the *Penis*; after this taking a crooked Knife, continue the Incision into the Bladder, carrying it a little under the *Os Pubis*, and immediately upon the Water's flowing out, introduce the Forefinger of your left Hand, which will direct the Forceps to the Stone.

THIS Method was at first received with great Applause in *London*, but after some Trial was rejected for the following Inconveniencies :

IT sometimes happens that the Bladder, notwithstanding the Injection, still continues so deep under the *Os Pubis*, that the *Peritoneum* being necessarily wounded first, the Intestines push out immediately at the Orifice, and the Urine afterwards empties into the *Abdomen*, in which Case hardly any recover. The Injection itself is exceeding painful, and however slow the Fluid be injected, it distends the Bladder so much more suddenly than the Urine from the Kidneys does, and so much faster than it can well bear, that it not only is seldom dilated enough to make the Operation absolutely secure, but is sometimes even burst,

burst, or at least its Tone destroy'd by the hasty Dilatation. What adds to the Danger here, is the possibility of meeting with a contracted indurated Bladder, which is a circumstance sometimes attending on the Stone, and indeed an exceeding dangerous one in all the other Methods, but would be frightful in this, by reason not only of the necessity of wounding the *Peritonæum*, but of the difficulty of coming at the Stone. If the Stone be very small, it is hard to lay hold of it with the Forceps, and in a fat Man the Fingers are not long enough for that purpose. If there are many little Stones, it will scarce happen that more than one at a time can be extracted; and if the Stone breaks, it not only is impracticable to take it all away in the Operation, but also, from the supine Posture of the Patient, it will generally remain in the Bladder; whereas in the other Methods, for the most part, it works itself out with the Urine. But even supposing that the Operation itself is prosperous, the consequences generally are very troublesome, for the Urine issuing out at an Orifice where there is no Descent, spreads itself upon the *Abdomen*, and makes very painful Excoriations; though what is still worse, it sometimes insinuates itself into the

Cells

Cells between the Bladder and *Abdominal* Muscles, and together with the Inflammation excited by the Operation, brings on a Suppuration there, which is always difficult to manage, and frequently mortal.



C H A P XXI.

Of the L A T E R A L O P E R A T I O N.

THIS Method was invented by an Ecclesiastick, who call'd himself *Frere Jaques*: He came to *Paris* in the Year 1697, bringing with him abundance of Certificates of his Dexterity in operating; and making his History known to the Court and Magistrates of the City, he got an Order to cut at the *Hotel Dieu*, and the *Charité*, where he perform'd this Operation on about fifty Persons. His Success did not answer the Promises he had made, and from that time his Reputation seems to have declin'd in the World, if we may give credit to *Dionis*, who has furnish'd us with these Particulars.

HE was treated by the Surgeons of those times as ignorant and barbarous; and though

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upon enquiry into the Parts that suffer in this Method, it was once the opinion of some of the most eminent amongst them, that it might be made a most useful Operation, if a few Imperfections in the execution of it were remov'd, yet after having given this Judgment, they suddenly dropt the pursuit, for no other reason, to all appearance, but that they would not be oblig'd to any one but a regular Surgeon for a Discovery of so great consequence. The principal Defect in his manner of cutting was the want of a Groove in his Staff, which made it difficult to carry the Knife exactly into the Bladder; nor did he take any care of his Patients after the Operation, so that for want of proper Dressings some of the Wounds prov'd Fistulous, and other ill consequences ensued: But I am inclin'd to think he succeeded better, and knew more at last than is generally imagin'd, for I remember to have seen, when I was in *France*, a small Pamphlet, publish'd by him in the Year 1702, in which his Method of operating appear'd so much improv'd, that it differ'd in nothing, or but very little, from the present Practice. He had by this time learnt the necessity of dressing the Wound after the Operation, and had profited so much

from the Criticisms of *Messieurs Mery, Fagon, Felix*, and *Hunauld*, that he then used a Staff with a Groove, and what is more extraordinary, had cut thirty eight Patients successively at *Versailles*, without losing one, as appear'd by a Certificate annex'd to the Piece.

AMONGST many that saw *Frere Jaques* operate, was the famous Professor *Rau*, who carried his Method into *Holland*, and practis'd with amazing Success: He never publish'd any account of it himself, though he admitted several to his Operations; but since his Death his Successor *Albinus*, Professor of Anatomy and Surgery at *Leyden*, has given the World a very circumstantial detail of the several Processes of it, and mentions as an improvement upon *Frere Jaques's* manner, that he made his Incision through the Bladder beyond the Prostate; but whoever will try the Experiment of making a Wound in that Place, without touching the Prostate, on a Staff, such as *Albinus* has delineated, which is of an ordinary length, will find it almost impracticable; for if by inclining the Staff a little towards the *Abdomen* and right Groin, you endeavour to raise that part of the Bladder towards the Wound, it slips at all but the very end of it into the *Urethra*, and leaves no Direction for the Knife.

Besides, that he cut the Prostate may be gather'd from the event of some Cases which Mr. *Chefelden* publish'd, when he first undertook the Lateral Operation: He consider'd it as almost impossible to make the Incision in this place, unless the Bladder was distended, to which end he injected as much Barley-water as the Patient could suffer, which made it protuberate forwards, and lie in the way of the external Wound, so that leaving the Staff in, he cut very easily upon it. The Operations were exceeding dextrous, but the Wound of the Bladder retiring back when it was empty, did not leave a ready Issue for the Urine, which insinuating it self amongst the neighbouring Muscles and Cellular Membranes, destroy'd four of the ten that he practis'd this Method upon, and some of the others narrowly escaped.

If therefore this was the consequence of a Wound of the Bladder beyond the Prostate in so many instances, and we find by experience that it is exceeding difficult in some Men to carry the Incision even so far as the Prostate, sure it is possible that *Albinus* may be mistaken in his Description; or even that *Rau* himself if he was of that opinion, might be deceived in the Parts he wounded, since we know it was generally thought, 'till within these few

years

ears, that the Bladder itself was cut in the old Way.

AFTER this unsuccessful Trial, Mr. Cheselden made use of the following Method, which is now the Practice of most *English* Operators.

THE Patient being laid on a Table, with his Hands and Feet tied and the Staff passed as in the old Way, let your Assistant hold it a little slanting on one side, so that the Direction of it may run exactly through the middle of the left *Erector Penis* and *Accelerator Urinae* Muscles; then make your Incision through the Skin and Fat very large, beginning on one side of the Seam in *Perinæo*, a little above the place wounded in the old Way, and finishing a little below the *Anus*, between it and the Tuberosity of the *Ischium*: This Wound must be carried on deeper between the Muscles, 'till the Prostate can be felt, when searching for the Staff, and fixing it properly if it has slipped, you must turn the edge of the Knife upwards, and cut the whole length of that Gland from within outwards, at the same time pushing down the *Rectum* with a Finger or two of the left Hand, by which Precautions the Gut will always escape wounding; after which the Operation finishes nearly in the same manner as with the greater Apparatus.

IF upon introducing the Forceps you do not perceive the Stone readily, you must lift up their Handle, and feel almost perpendicular for it, since for the most part, when it is hard to come at, it lies in one of the *Sinus's* sometimes form'd on each side of the Neck of the Bladder, which project forward in such a manner, that if the Stone lies there, the Forceps pass beyond it the moment they are through the Wound, so that it would be impossible to lay hold of it, or even to feel it, if not aware of this Circumstance.

WHEN the Stone breaks, it is much safer to take away the Fragments with the Forceps, than to leave them to be discharged with the Urine; and if the pieces are very small, like Sand, a Scoop is the best Instrument, and preferable to the use of Injections.

As there are hardly any instances of more Stones than one, when the Stone taken away is rough; so when it is smooth and polish'd, 'tis almost a certain sign of others behind; on which account an Operator should be careful in that case to examine, not only with his Fingers, but some convenient Instrument, for the remaining ones.

THE great Inconvenience of the Lateral Operation is the Hæmorrhage which sometimes ensues in Men, for in Children the danger of it is not worth mentioning ; this however is the principal Objection which has prevented its being universally practis'd, but in all likelihood it will be more general, when the Merits of the Method are better known, and it is once discover'd that the ill Consequence of most of these Hæmorrhages is owing more to an Error in operating, than to the nature of the Operation ; for I think I can positively say, that all those Branches of the Hypogastrick Artery which lie on this side of the Prostate, may be taken up with the Needle, if the Wound be made large enough to turn it about freely at the bottom ; yet this is a Circumstance that many Surgeons have been deficient in, and instead of making it three or four Inches long in a Man, they have sometimes made it not above an Inch, in which case it is not only impossible to tie the Vessels between the Skin and Bladder, but it also prevents the proper Application of Lint, or Stypticks to the Artery creeping on the Prostate, so that it is not surprising the Operation should be discountenanced, when the Practice of it is attended with this difficulty.

IF in the Operation any large Vessels of the external Wound should be divided, it is adviseable to tie them before the extraction of the Stone, but the necessity of doing this does not occur once in twenty times: It rarely happens that the Vessels of the Prostate burst open any considerable time after the Operation, if they did not bleed during the Performance of it, but as it is the nature of the Symptomack Fever to dilate the Vessels, and quicken the Motion of the Blood, 'tis proper to be upon our guard, especially in plethorick People, and endeavour to obviate the Accident by taking away ten or twelve Ounces of Blood from the Arm, and giving an Opiate immediately.

T H E R E is but one Objection more of any consequence, which is the danger of wounding the *Rectum*, and this is of no great weight, if the Operator observes the Rule I have laid down with regard to that Article.

I N this description I believe I have been so far from disguising the Inconveniencies of the Lateral Operation, that before I speak of its Advantages I should once again repeat, that these Effusions of Blood are but very rare, and seldom or never mortal, when properly manag'd; of which the World needs no bet-

er Proof than the late extraordinary Success
we have cut with in our Hospitals, which I
believe has never been equall'd in any Time,
or Country.

IN this Method the remarkable Parts
wounded by the Knife are, the *Musculus*
Transversalis Penis, *Levator Ani*, and *Prostate*
Gland: In the old Way, the *Urethra* only is
wounded about two Inches on this side the
Prostate; and the Instruments are forced
through the rest of the Passage, which is
compos'd of the Bulbous Part of the *Urethra*,
the Membranous Part of the *Urethra*, the
Neck of the Bladder, and *Prostate Gland*.
This Channel is so very narrow, that 'till it be
tore to pieces, the Management of the For-
ceps is exceeding difficult, and it happens fre-
quently that from the tender Texture of the
Membranous Parts, the Forceps are unwari-
ly push'd through it between the *Os Pubis*
and Bladder; besides that in introducing
the Gorget upon the Staff, it is apt to slip
downwards between the *Rectum* and Blad-
der, both which Inconveniencies are avoid-
ed in the Lateral Operation. It is true, the
Wound made in the Lateral Method, will
not admit of the Extraction of a large Stone
without Laceration, as well as in the old Way;
but

but in the one case the Laceration is small, and made after a Preparation for it by an Incision, and in the other all the Parts I have mention'd are tore, without any previous Opening, and which are so very tight that the Pain of the Distension must necessarily be excessive. It is pity the Operators do not in the old Way always slide the Knife along the Groove of the Staff, 'till they have quite wounded through the length of the Prostate, since they are convinc'd that by the Extraction of the Stone, it is open'd in a ruder and more dangerous manner than by Incision, and without any Advantages from it; because this Opening is made by the finishing of the Operation, whereas for want of it before the Extraction, we can hardly widen the Forceps enough to receive a large Stone, and when we do, the Resistance is so very great as often to break it, notwithstanding all our care. However, in both these Operations the Surgeon must not grasp the Stone with violence, and even in extracting must, with both Hands to the Branches of his Forceps, resist their shutting so tight, as the Compression from the Lips of such a narrow Wound would otherwise make them: Here I speak of the difficulty of laying hold of a Stone in any
part

part of the Bladder, but if it happens to lie in one of the *Sinus's* before-mention'd, the Forceps are so confin'd that it becomes still harder. The Extraction of very large Stones is much more impracticable with the greater Apparatus than by this Method, because of the smallness of the Angle of the Bones in that part where the Wound is made; so that indeed it is necessary in almost all Extractions to pull the Stone downward towards the *Rectum*, which cannot be done without great violence to the Membranous Parts, and even the separation of one from another, whence follow Abscesses and Sloughs about the Wound, which is a circumstance not known in the Lateral Operation. *Ecchymoses* follow'd by Suppuration and Gangrene sometimes spread themselves upon the *Scrotum*, and in short all the Inconveniencies and ill Symptoms that attend upon the Lateral Operation, except the Hæmorrhage, are in a more violent degree incident to the old Way.

AN Incontinence of Urine is very uncommon after the Lateral Operation, and a Fistula seldom or never the consequence of it, but the Prevention of a Fistula seems to depend very much upon the Skill of dressing the Wound afterwards, and perhaps it would not so often

often happen if the Dressing was rightly managed in the old Way, though certainly this Method is much more liable to them, as the Wound is made among Membranes, and more contused, and in many, from an Incontinence of Urine is continually kept open. I have seen some Instances indeed in the Lateral Operation, where through neglect the Bladder has remained fistulous, but the Wound being in a fleshy part, I have without great difficulty, got little Granulations to shoot up, and heal'd it externally; so that at present I think a Fistula can hardly be accounted one of the Inconveniencies of cutting for the Stone in the Lateral way.

THE manner of treating the Patient after the Operation is pretty nearly this: If it happens that the Vessels of the Prostate bleed, dry Lint, or Lint dipp'd in some styptick Water, such as *Aqua Vitrioli*, must be applied to the Part, and held there with a considerable degree of Pressure for a few Hours, and the Patient may take an Opiate: If the Wound does not bleed, a little dry Lint, or a Pledgit of Digestive, laid gently in it, is best. The Place where the Patient lies should be moderately cool, as Heat not only disposes the Vessels to bleed afresh, but generally makes him

him low and faint. If soon after the Operation he complains of a Sickness at the Stomach, or even a Pain in that part of the *Abdomen* near the Bladder, 'tis not always a sign of a dangerous Inflammation, but frequently goes off in half an Hour: To assist however in its removal, a Fomentation put into an Hog's Bladder, and apply'd pretty warm to the Part in Pain, will be of great service: if the Pain increases, after two or three Hours, the consequence is much to be fear'd, and in this case bleeding, and emollient Clysters by way of Fomentation to the Bowels, are immediately necessary.

THE first good Symptom after the Operation, is the Urine coming freely away, as we then know the Lips of the Bladder and prostate Gland are not much inflam'd, for they often grow turgid, and shut up the Orifice in such a manner as not only to prevent the Issue of the Water, but even the Introduction of the Finger or female Catheter, so that sometimes we are forced to pass a Catheter by the *Penis*. From this Symptom too we learn, that the Kidneys are not so affected by the Operation as to cease doing their Office, which, though a very rare circumstance, may possibly occur. If the Patient should become languid, and
continue

continue without an Appetite, Blisters prove very beneficial, which may be applied with great safety, and little pain; as there is seldom or never any Strangury. About the third or fourth Day a Stool must be procur'd by a Clyster, for it seldom comes naturally the first time, and this Method must be continued as every Man's discretion shall guide him. As soon as the Patient comes to an Appetite, he should be indulg'd in eating light Food, with this Caution, that he do not eat too much at a time; It sometimes happens that a Fortnight or three Weeks after the Operation one or both Testicles indurate and inflame; which Disorder may generally be remov'd by Fomentations and discutient Applications; or if a Suppuration ensues, which however is very seldom the Case, the Abscess is not very difficult of Cure.

DURING the Cure the Wound may be fomented once or twice a-day, and if the Buttocks are excoriated by the Urine, let them be anointed with *Nutritum*: The Dressing from first to last is seldom any other than with a soft Digestive, or dry Lint, for the whole Art of healing the Wound consists in the force with which the Dossil is apply'd; if it be cram'd in hard it becomes a Tent, and prevents

vents the growth of the little tender shoots of Flesh, 'till in process of time, from the continued Distension, and long Drain of the Urine, the whole Cavity becomes callous, and forms it self into a Fistula: On the other hand if the Wound be dress'd quite superficially, the external Parts of it being more prone to heal and contract than the internal, the Consequence will be a degree of Obstruction to the Urine and Matter, which lying about the Wound of the Bladder, for want of a discharge, will indurate that Part, and likewise occasion a Fistula. This method of dressing is not peculiar to Wounds after cutting for the Stone, but is as applicable to *Fistula's in Ano*, and almost all Abscesses whatsoever; so that the Branch of Surgery, which regards the Treatment of hollow Wounds, depends much more on the proper Observance of this Rule than the Application of particular Medicines.



C H A P. XXII.

Of the S T O N E *in the* U R E T H R A.

IF a small Stone be lodg'd in the *Urethra* near the Glans, it may often be push'd out with the Fingers, or pick'd away with some Instrument, but if it stops in any other part of the Channel, it may be cut upon without any inconvenience; the best way of doing it is to pull the Prepuce over the Glans, as far as you can, and then making an Incision the length of the Stone, through the Teguments, it may be turn'd out with a little Hook or the point of a Probe: The Wound of the Skin slipping back afterwards to its proper situation, and from the Orifice of the *Urethra*, prevents the Issue of the Urine, and very often heals in twenty-four Hours. This is a much less painful method of extracting Stones from the *Urethra*, than by any Instruments that have hitherto been devis'd.

C H A P. XXIII.

Of the *Extraction of the Stone in*
W O M E N.

THE Extraction of the Stone in Women will easily be understood, since the whole Operation consists in placing them in the same manner as Men, and without making any Wound, introducing into the Bladder a straight Director, upon that a Gorget, and afterwards the Forceps to take hold of the Stone; all which may be done without difficulty, by reason of the shortness of the *Urethra*. If the Stone proves very large, and in extracting draws the Bladder forwards, 'tis adviseable to make an Incision through the Neck of it, upon the Stone, which not only will facilitate the Extraction, but also be less dangerous than a Laceration, which would necessarily follow. The Dressings are Fomentations and emollient Ointments, which should be applied two or three times a-day, and the Patient in other respects be treated like Men who have undergone the Operation for the Stone.

M

PLATE

The E X P L A N A T I O N.

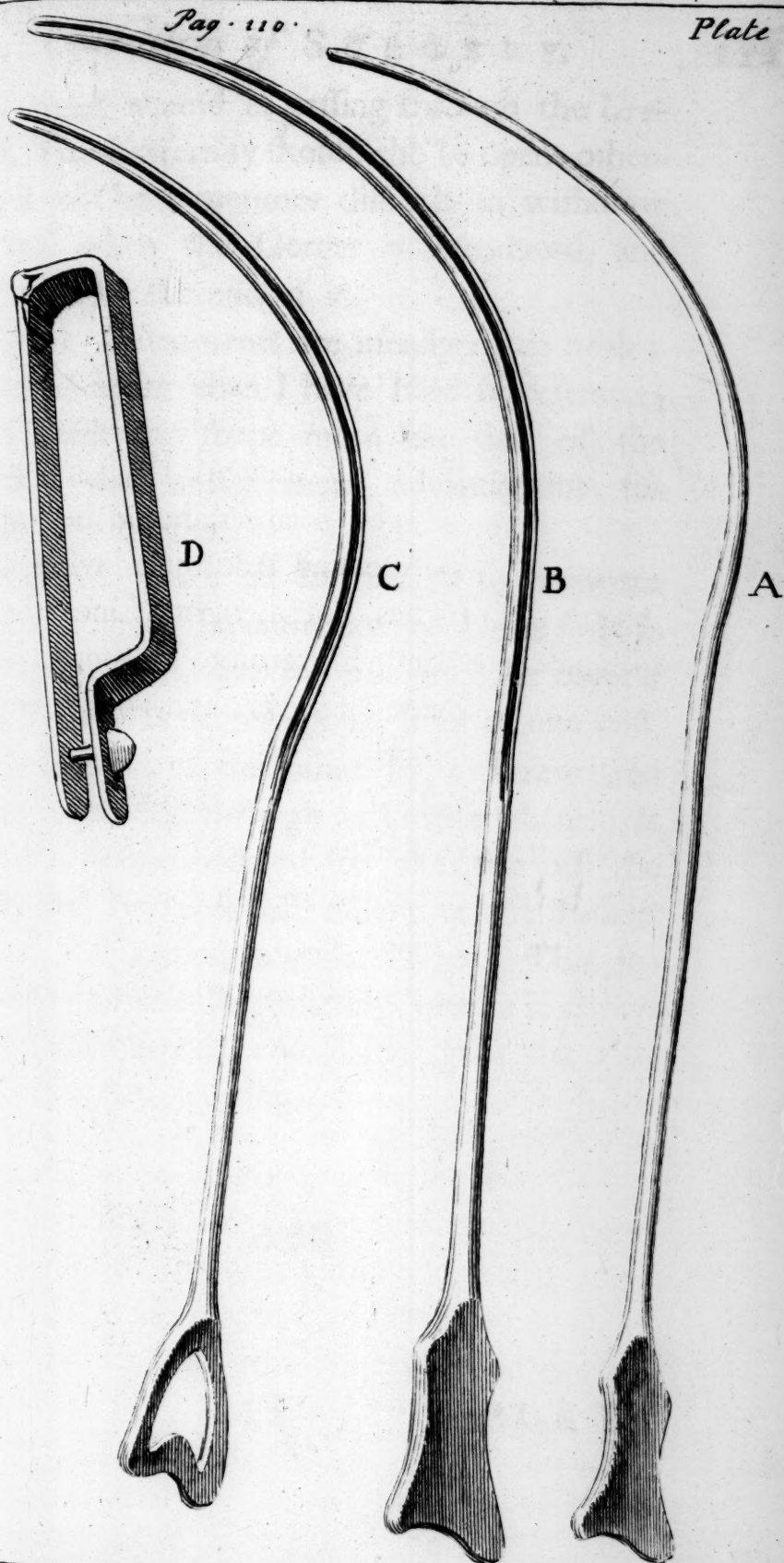
A. A Sound us'd in searching for the Stone.

THE Size represented here is but a little too large for the youngest Children, and may be us'd upon Boys 'till they are thirteen or fourteen years of age; a larger should be employ'd between that Age and Adulthood, when one of about ten Inches, in a right Line from the Handle to the Extremity, is proper. This should be made of Steel, and its Extremity be round and smooth.

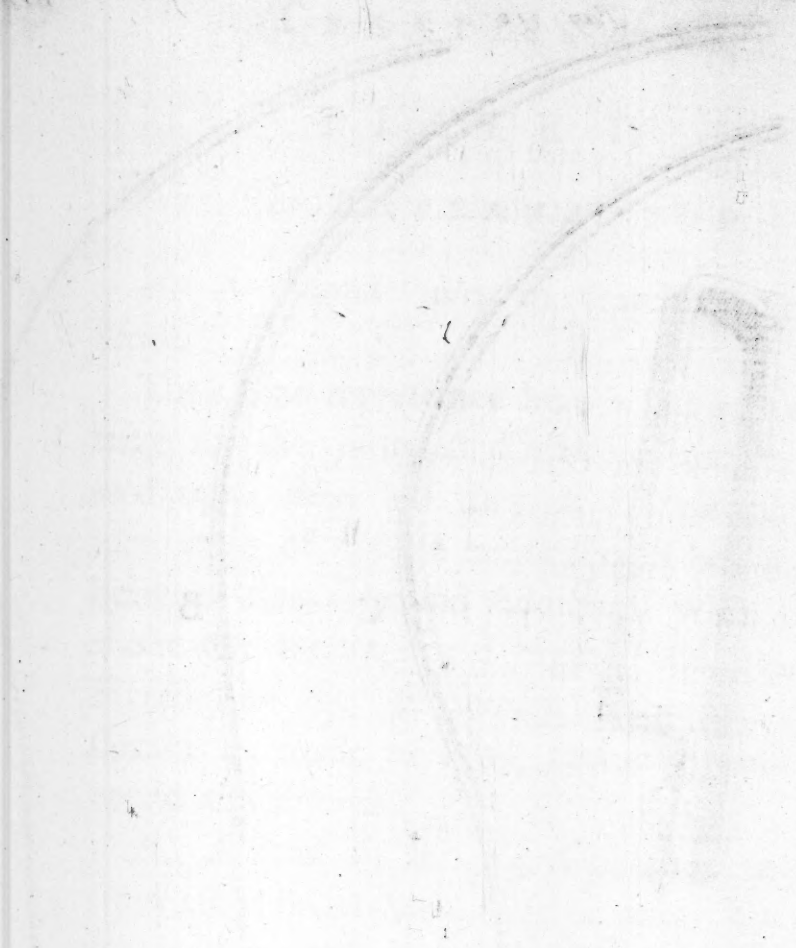
B. A Staff fit for the Operation on Boys from eight to fourteen years of age. The Staff for a Man must be of the size of the Sound I have already described.

C. A Staff something too big for the smallest Children, but may be us'd upon Boys from about four years of age to eight.

THE Staff has a Groove on its convex side which first serves as a Direction where to cut, and afterwards receiving the Beak of the Gorget, guides it readily into the Bladder. Care should be taken in making the Groove, that the Edges of it be smooth'd down, so that they



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they cannot wound in passing through the *Urethra*. The Extremity should also be open, otherwise it will be sometimes difficult to withdraw the Staff when the Gorget is introduced, and presses against the end of it.

THESE Instruments are usually made with a greater Bending than I have here represented; but I think this shape more like that of the *Urethra*, and rather more advantageous for making the Incision.

D. THE Yoke, an Instrument to be wore by Men with an Incontinence of Urine: It is made with Iron, but for use must be cover'd with Velvet: It moves upon a Joint at one end, and is fasten'd at the other by a Screw and Button, admitted through an Orifice there. It must be accommodated to the size of the *Penis*, and be taken off whenever the Patient finds an Inclination to make Water. This Instrument is exceeding useful, because it always answers the purpose, and seldom galls the Part after a few days wearing.



PLATE V.

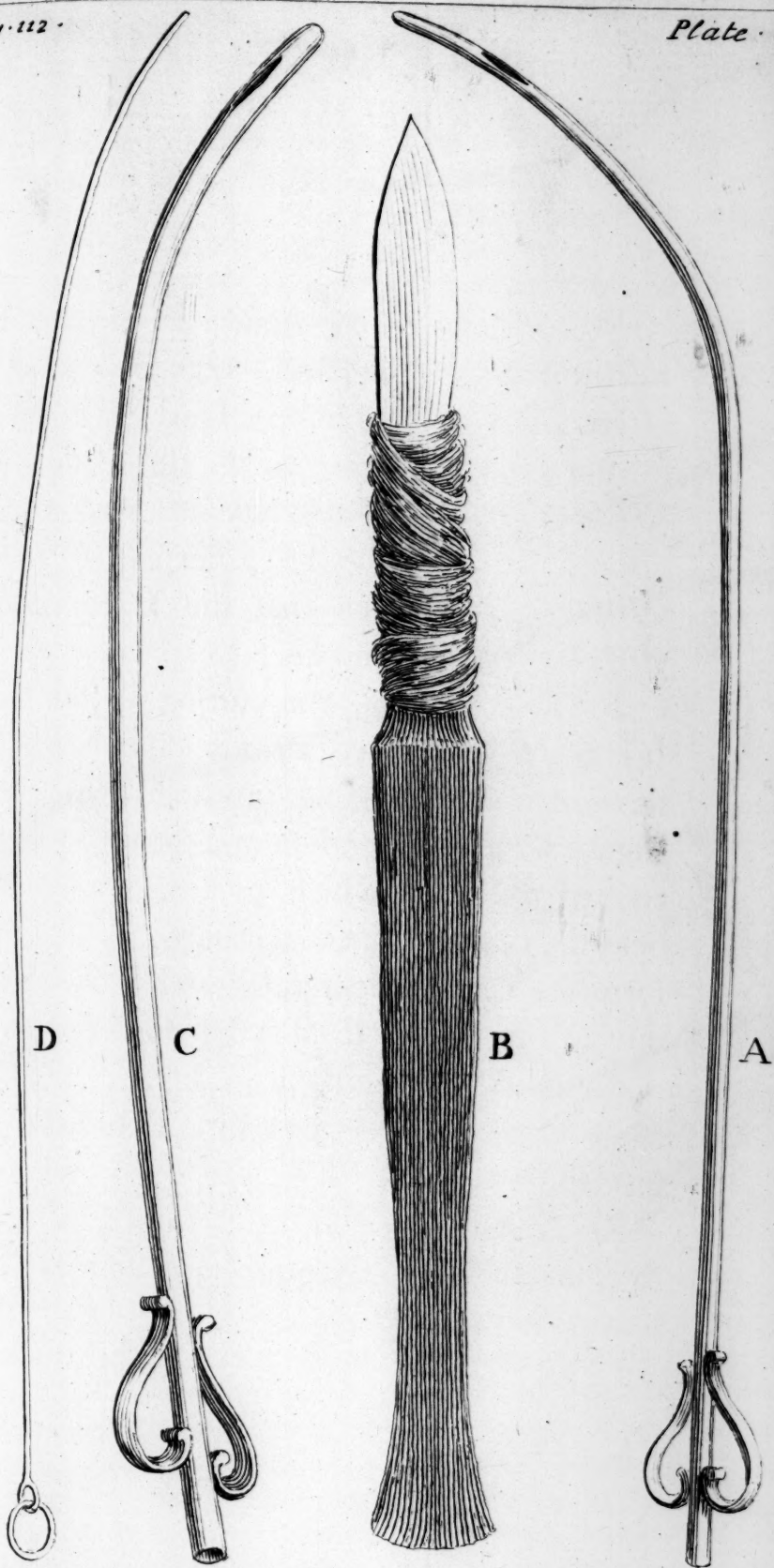
The EXPLANATION.

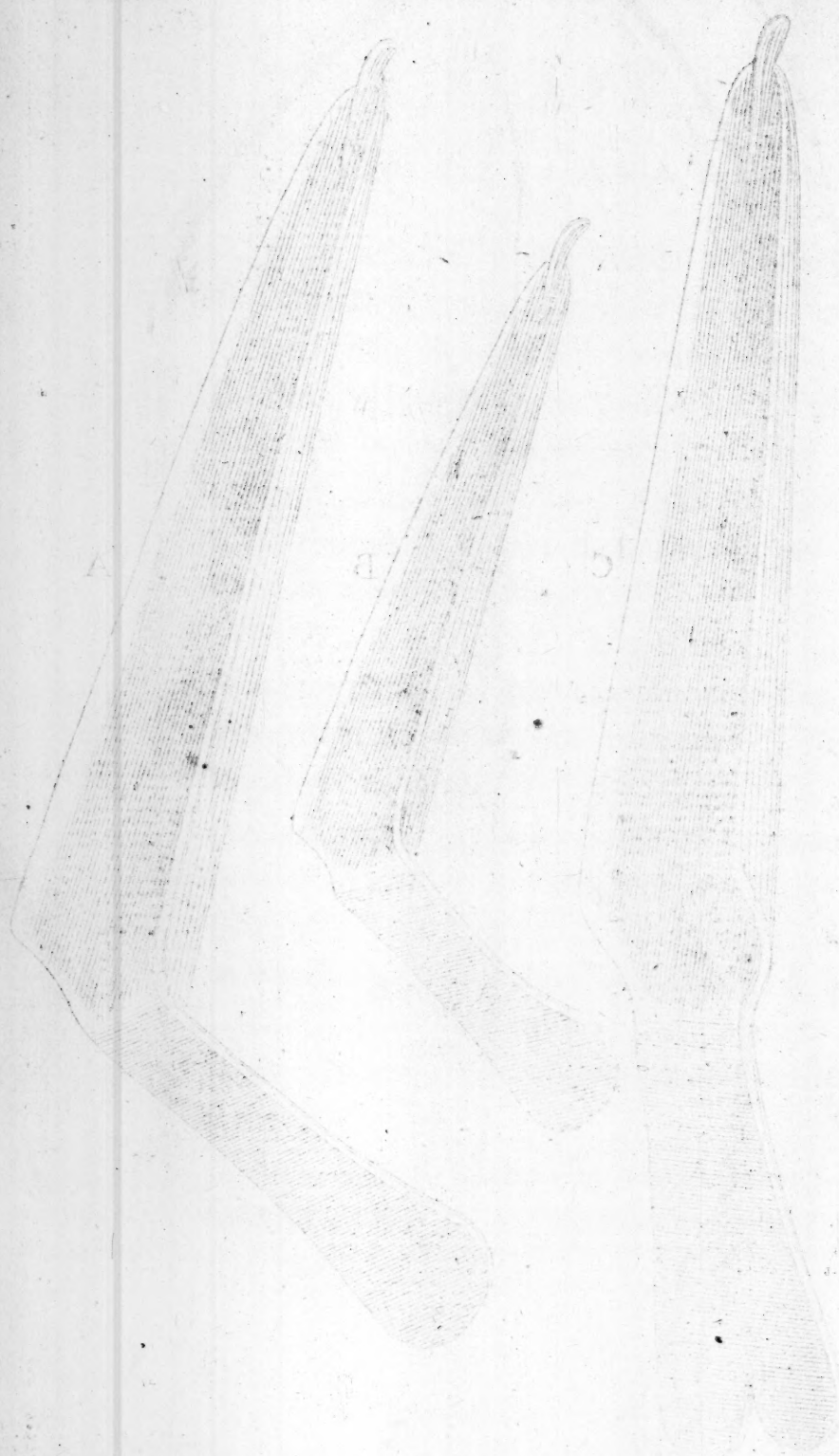
A. A small Catheter made of Silver. This Instrument is hollow, and serves to draw off the Urine when under a Suppression: It is also us'd in the high Operation to fill the Bladder with Water: Near its extremity are two Orifices, through which the Water passes into its Cavity. Care should be taken that the Edges of these Orifices are quite smooth.

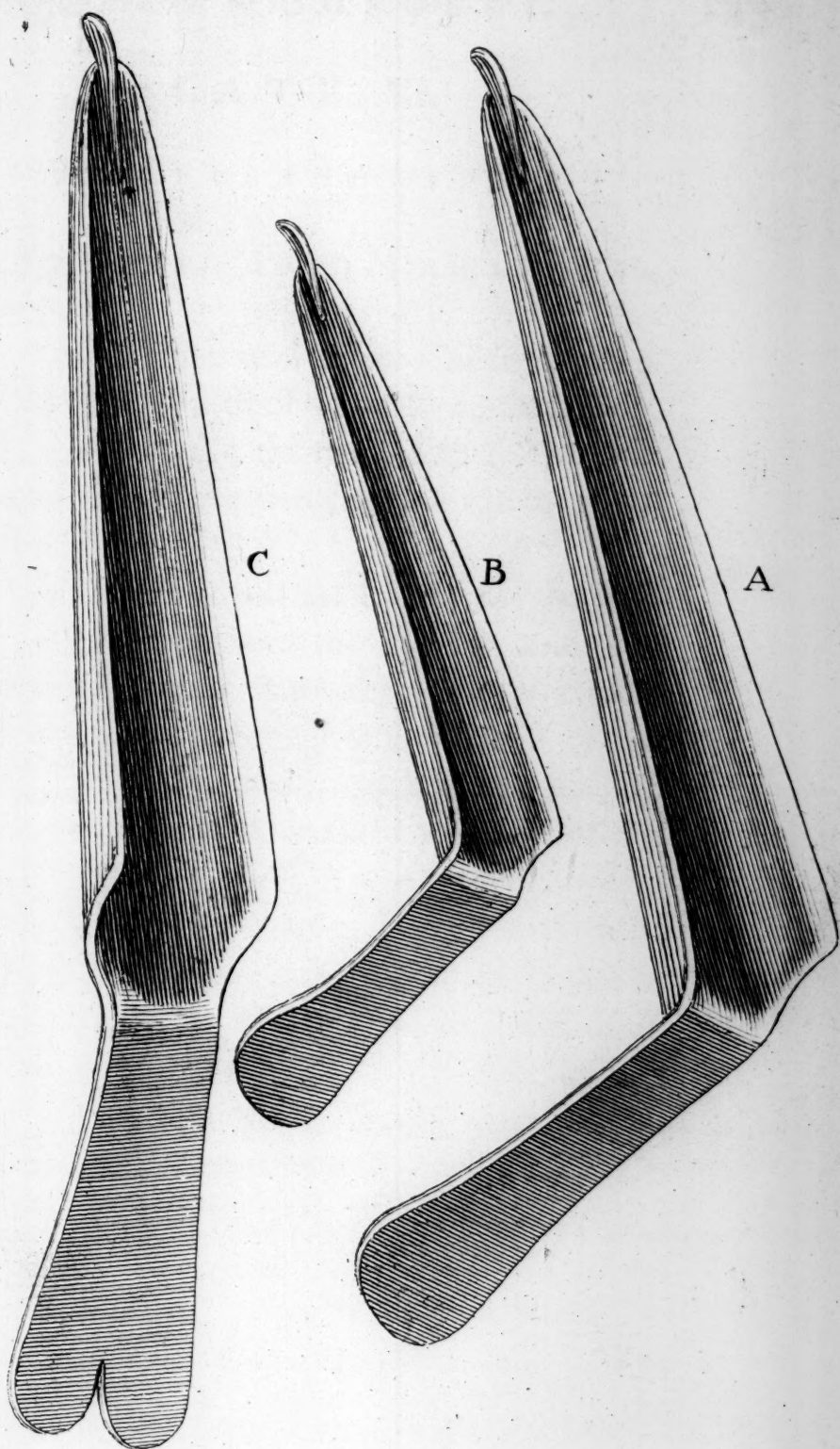
B. THE Knife us'd in cutting for the Stone. It is the same I have already described; but I thought it might not be improper to repeat the Figure with the alteration of a quantity of Tow twisted round it, which makes it easier to be held than any other Contrivance, when we perform the Lateral Operation, and turn the Edge upwards to wound the Prostate Gland.

C. A Female Catheter, differing from the Male Catheter in being almost straight; and something larger.

D. A silver Wire to pass into either Catheter for the removing any grumous Blood or Matter that clogs them up.







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P L A T E VI.

The E X P L A N A T I O N.

A. The Gorget us'd upon Men in the Lateral Operation.

B. The Gorget us'd upon Children under five years of age in the Lateral Operation.

A Gorget between the sizes of these two will be fit for Boys from five years of age to fifteen or sixteen.

THESE Instruments are hollow for the Passage of the Forceps into the Bladder, and their Handles lie slanting, that they may the more readily be carried through the Wound of the Prostate, which is made obliquely on the left side of it. The Beak at the Extremity of the Gorget must be smaller than the Groove of the Staff which is cut upon, because it is to be receiv'd in the Groove. Care should be taken that the Edges of the Gorget near the Beak are not sharp, lest instead of dilating the Wound, as it ought, it should only cut on each side when introduc'd; in which Case it would be difficult to carry the Forceps into the Bladder.

C. A Gorget, with its Handle exactly in the middle; this shap'd Instrument is us'd in

the old Way. All the Gorgets should be made of Steel.

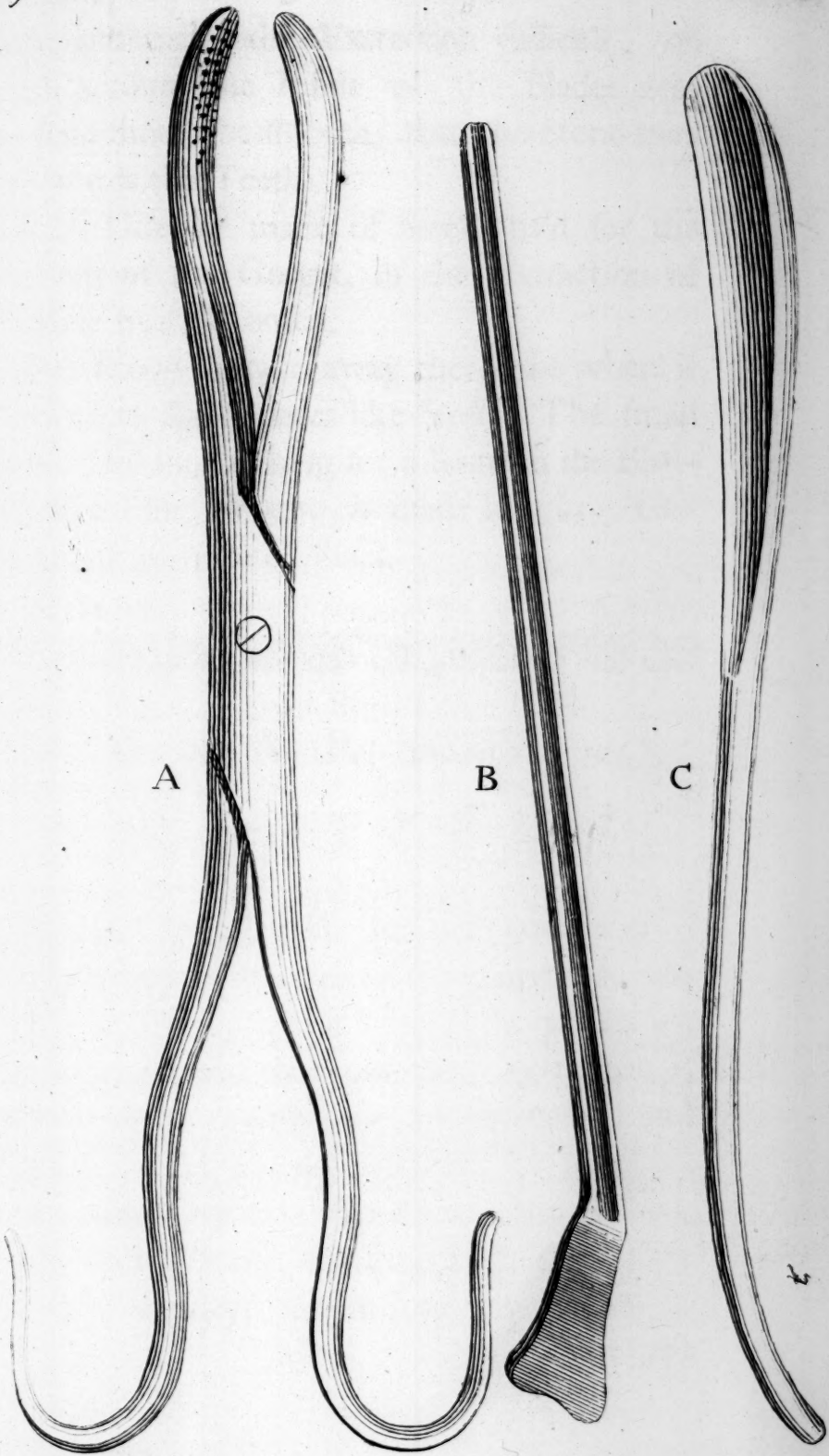
P L A T E VII.

The E X P L A N A T I O N.

A. THE Forceps for extracting the Stone. These are represented a little open, that the Teeth may be better seen withinside.

THIS Instrument must be of different sizes for different Ages and Stones, from the length of that in the Copper-plate, to one of near a foot long; but the Forceps of about eight inches long will be found most generally useful. The number necessary to be furnish'd with, will be four or five.

G R E A T care should be taken by the Makers of this Instrument, that it move easy upon the Rivet, that the Extremity of the Chops do not meet when they are shut, and particularly that the Teeth be not too large, lest in entring deep into the Stone they should break it: It is of consequence also that the Teeth do not reach farther towards the Joint than I have here represented, because a small Stone, when receiv'd into that Part, being held fast there, would dilate the Forceps excessively,



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sively, and make the Extraction difficult; on which account the Inside of the Blades near the Joint should be smooth, that the Stone may slip towards the Teeth.

B. A Director made of Steel, us'd for the Direction of the Gorget, in the Extraction of the Stone from Women.

C. A Scoop to take away the Stone when it is broke into small pieces like Sand. The small end is useful in searching for a Stone in the Bladder, when the Wound is made into it. This Instrument is made of Steel.



C H A P. XXIV.

Of the E M P Y E M A.

THE Operation for the *Empyema* generally implies an artificial Opening made into the Cavity of the *Thorax*, by which we evacuate any Fluid that lies there extravasated, and is become troublesome by its weight and quantity. The Fluids described as necessary to be voided by this Operation, are Blood, Matter, and Water; but I am inclin'd to think that upon enquiry, either into the Reason or

Success of practising in all these Instances, we shall be induced to discard it as uncertain, if not useless in the two first, and confine its Advantages wholly to the last.

WHEN Blood is the Fluid suppos'd to require Evacuation by this Method, 'tis always extravasated through some Wound of the Vessels of the Lungs or *Thorax*, and being discharged in great quantities on the Diaphragm, is said to oppress Respiration 'till let out by some convenient Perforation, made in the most depending part of that Cavity, which is the only kind of Perforation into the *Thorax* distinguish'd by the name of the *Operation for the Empyema*: But if the Blood-Vessels wounded are very large, the Opening at the bottom of the *Thorax* can be by no means adviseable whilst the Hæmorrhage continues, since it will be a Drain for a dangerous Effusion of Blood, which perhaps would otherwise be chok'd up and stopp'd for want of a ready Issue.

I KNOW there are some Surgeons who admit of this Reasoning, yet still judge it necessary to perform the Operation when the Hæmorrhage is stopp'd: But since in Wounds of the Lungs, we see the Blood not only for the most part finds some vent by the external Wound,

Wound, if left open, but is constantly spit up by the *Trachea*, had we no farther Proofs of this absorbent Power in the Lungs, we might from hence be persuaded of the probability of its being more safely carried off so, than by any artificial Opening we can possibly contrive in the *Thorax*.

OR if it be thought that the extravasated Blood, being coagulated in the *Thorax*, cannot be taken up by the Vessels of the Lungs, yet even in that case the Operation usually practis'd will not answer the purpose; for besides that the Lungs frequently adhere to the *Pleura* in the place of Incision, which would absolutely prevent any advantage from it, the depth and narrowness of the Orifice, and its height above the Diaphragm, on which the congeal'd Blood is suppos'd to lie, will make the Success at best very precarious.

IF then the attempt to discharge the Blood by this Operation be not eligible, when we know of its Extravasation, it will be still less so in cases that are doubtful, nor will the use of Tents and Injections for that purpose be advisable.

THE Rules laid down in some Books for distinguishing if a Wound penetrates, have led Practitioners into mischievous Methods,
by

by advising them to examine these Wounds with the Probe, or for more certainty the Finger, which if rudely us'd, sometimes even tear into the *Thorax*, always force or press the Parts too much, and often separate the Lungs from the *Pleura*, when they happen to adhere; all which Violences will produce Abscesses there, especially if assisted afterwards by Tents or Injections.

To empty the *Thorax* in a Rupture of any Vessels which open into it, Bleeding is very necessary, which not only stops the Hæmorrhage by abating the force of the Circulation, but likewise from unloading the Vessels of their Contents, makes them more fit to receive the extravasated Fluid by Absorption; gentle Evacuations, and Pectorals are also very serviceable, but above all things a Low-Diet is absolutely necessary. If the Intercoastal Artery should be wounded, it may be stopp'd by external means, but the removal of the Blood insinuated into the Cavity, must even, in this case, be chiefly left to Nature, and the Wound in all these Instances be treated superficially, without being enlarged. I am the more particular in laying down this Doctrine as it is not built on mere Theory, but has been surprisingly

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confirm'd by Practice in a variety of Cases:
And with regard to Wounds of the *Thorax*
in general the difference of Event in treating
them with Tents or with superficial Dressings,
is so remarkable, that I think the latter Method
cannot be too much inculcated.

BUT what I have here advanced concern-
ing the Excellence of superficial Applications,
without dilating the Wound, to make way for
the issue of the Blood or succeeding Matter,
must be consider'd with regard to Punctures
or Incisions by sharp Instruments, not follow'd
with a great Discharge: For where the Wound
is made by Fire-Arms, the Method of Practice
must be sometimes alter'd, because not only
Sloughs, and great Suppurations ensue, but very
often pieces of the Shirt or Coat are carried in
with the Bullet, which will perhaps require an
Enlargement of the Wound, in order to be
freely discharged; though even upon this ac-
count there will be no Occasion to make an
Opening at the bottom of the *Thorax*, since
the mere Dilatation of the Wound will more
readily give vent to the *Pus* and extraneous
Bodies, than an Orifice made lower, because
the Lungs being inflamed by the Wound, will
generally adhere to the *Pleura*, and break off
the Communication between the Abscess and
the

the Cavity below it. In dressing the dilated Wound Care must be taken to apply the Doffils with such Pressure only as shall be sufficient to keep open the the external Orifice, and not crowd them into the *Thorax*, so as to become a Tent, and lock up that Matter which the very design of Dilatation is to give a Discharge to.

I F I have shewn the Impropriety of the Operation for the *Empyema*, in relation to Wounds of the *Thorax*, its unsuitness also in the generality of those Cases where Matter is suppos'd to lie loose in the *Thorax* will appear; for though there are some few Histories in Authors, of Abscesses in the Lungs which have burst and discharged their Matter upon the *Diaphragm*, yet these Instances are so very rare, that upon opening many who have lost a great part of their Lungs by Impoisthumation, I do not remember to have found any Matter in their *Thorax*, and indeed it is notorious that most consumptive People die of the Discharge they spit up, which Circumstances, together with the precariousness of the Symptoms of an oppress'd *Diaphragm* from a mere lodgement of extravasated Matter, render the Operation, in my Opinion, but little adviseable upon such a Presumption. Generally speaking, in any Inflammation of the *Pleura* or Lungs,

an Adhesion of both ensues; in consequence of which, Nature finds a Discharge outwardly, it being most frequent for Abscesses of the *Pleura* and Intercoastal Muscles, and not uncommon even for Abscesses of the Lungs to break externally. In case of an Adhesion, no farther Operation is requir'd than opening the Tumour when suppurated, with a Lancet, and if the Discharge is so great as to forbid the healing the external Ulcer, it may be kept open with a hollow Tent; by which manner of Treatment many have liv'd a long time with a running Fistula.

THE last sort of Fluid said to require Issue from this Operation, is Water, which however very seldom collects in such manner as to become the proper subject of the Operation; for if the Dropsy of the *Thorax* is complicated with an *Anasarca*, or even *Ascites*, it is certainly improper, and indeed it can hardly ever take place, but where the Distemper is single, and takes its rise from the same sort of Disorder in the Lymphatics of the *Pleura*, as the *Hydrocele* does from those of the *Tunica Vaginalis*. The Symptoms of this Dropsy are, a small Cough without Spitting, a little slow Fever from the disturbance of Respiration, sometimes too it is said the Water by a sudden Jirk may

may be heard to quash, and generally speaking, its weight upon the *Diaphragm* and *Mediastinum* are so troublesome as to oblige the Patient to stoop forward when in an erect Posture, and to turn upon the affected side when he lies down; and for the same Reason, when there is Water in both Cavities of the *Thorax*, he is forced to lie on his Back.

THE manner of operating in this case, is to pitch upon the most depending Part of the *Thorax*, which some have suppos'd to be between the eighth and ninth Rib, and others between the ninth and tenth, at such a distance from the *Vertebræ* that the depth of the Flesh may not be an Impediment to the Perforation. This distance is determined to be about a Hand's breadth, and here with a Knife, Scissars, or Trocar, we are order'd to make the Perforation, but in doing it there are a great many difficulties: In fat Persons 'tis not easy to count the Ribs, and the Wound will be very deep, and troublesome to make; it is hardly possible to escape wounding the Intercostal Artery which runs in this Place between the Ribs, or if you avoid it by cutting close to one of the Ribs, a Caries of the Bone will follow from the Pressure of the Tent employ'd afterwards: Again, the Inflammation of the Wound may possibly affect

ng, affect the Diaphragm, which is suppos'd almost
/si- contiguous to it, and this may prove of very
ient ill consequence; so that upon the whole with-
and out any farther recital of Objections to the *Em-*
lies *pyema* thus perform'd, it cannot appear an
ere adviseable Operation. But if the only advan-
he tage propos'd by this situation of the Wound
is from its dependency, the Purpose of emptying
the Water will be as well answer'd by an
Opening between the sixth and seventh Rib,
half way from the *Sternum* towards the Spine,
which by laying our selves down becomes in
effect as depending an Orifice, as the other in
sitting up, and by Opening in this manner we
avoid all the Inconveniencies in the other Me-
thod: For in this part of the *Thorax* there is
very little depth of Muscles, the Artery lies
concealed under the Rib, and the Diaphragm
is at a great distance; so that none of those
Mischiefs can ensue I have suppos'd in the
other Method, which consequently will give it
the Preference. If it should be objected that
the Water cannot be discharged by this Orifice,
while we are erect, whereas by making it in
the lower part of the *Thorax* it will be con-
tinually draining: I think it may be answer'd
that after it is once emptied, it will hardly in
twelve Hours be separated in greater quantity
than

than what will lie upon the Diaphragm below the Opening made even by that Operation, and consequently cannot be more readily discharged by one Orifice than the other. The Treatment of the Wound will be according to the Nature of the Discharge, if after the first Day or two, there appears no Drain you may let the Orifice heal up, but if it continues, it may be kept open with a short hollow leaden Tent, as in the purulent Evacuations, 'till such time as an Alteration in that Circumstance will give us leave to cicatrize with safety.





C H A P. XXV.

Of Encysted TUMOURS.

THESE Tumours borrow their Names from a Cyst or Bag in which they are contained, and are farther distinguished by the Nature of their Contents: If the Matter forming them resembles Milk-Curds, the Tumour is call'd *Atheroma*; if it be like Honey, *Meliceris*, and if compos'd of Fat, or a suety substance, *Steatoma*. The two first are not readily distinguish'd from one another, but their difference from the *Steatoma* is easily learnt by their Softness and Fluctuation. These Tumours appear in every part of the Body, and in places where there are no Glands, which, with the circumstance of their Composition continuing always the same from their first Formation, agrees but little with an Opinion some of the Moderns are so fond of, that this kind of Swelling is an obstructed Gland, whose Membrane forms the Cyst, and whose Fluids, when they burst out of their Vessels after a long Obstruction, make the Matter contained.

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THE *Steatoma* is never painful, 'till by its weight it grows troublesome, nor is it a mark of general Indisposition of Body; so that the Extirpation seldom fails of success. The size of some of them is very large, frequently weighing five or six Pounds, and there have been Instances of their weighing above forty.

WHEN the *Steatoma* is irregular in its Surface, with Eminencies and Depressions, it is fleshy; whereas the fat one is for the most part of a uniform, smooth outside. The Operation for the *Steatoma* will be understood by the description of that for the *Schirrus*.

THE *Atheroma* is much more common than the *Meliceris*, at least if all Encysted Tumours with Matter not curdled may in Compliance with Custom, be call'd so: These are more frequent, and grow larger than those where the Matter is curdled, being often attendant on scrophulous Indispositions, which makes them more difficult in the Cure.

THE Cysts of these Tumours, with the Skin covering them, after a certain period of growth resisting any further Enlargement, do frequently inflame and break; but this Opening is not so advantageous for the Cure as Extirpation with the Knife, which should be done in the Infancy of the Swelling. When the

Tumour

Tumours are no bigger than a small golden Pippin they may be dissected away from under the Skin, by making a straight Incision only through it, but if they exceed this Bulk, an oval piece of Skin must be cut through first, to make room for the management of the Knife and taking away the Tumour. In cutting, it happens very often that an Operator unwarily wounds the Cyst, and empties it; in which Case he must afterwards, by the help of a Hook, dissect as much of it away as he can conveniently, which is a less painful, and more secure Method than destroying it afterwards with Escharoticks: This Rule is to be observed when the Cyst runs so deep amongst the Interstices of the Muscles as to make it impossible to remove the whole of it, where if we cut off a great quantity, the rest usually comes away in Sloughs and Matter. I once open'd a remarkable *Atheroma* of this kind; it was about as big as the Crown of a Man's Hat, and lay underneath the Pectoral Muscle, extending itself towards the Arm-pit, amongst the great Vessels, and pressing against the Clavicle: I cut away a large circular piece of the Skin, Pectoral Muscle, and Cyst, but did not dare to touch the lower part of it, which I could not remove without laying the Ribs bare;

however, it separated in the digestion of the Wound, which for some time discharged excessively, and the whole Cavity fill'd up, leaving him the use of his Arm almost perfect: After this, two or three small Splinters of the Clavicle work'd away through the Skin, but without any great Inconvenience.

THE Ganglion of the Tendon is an encysted Tumour of the *Meliceris* kind, but its Fluid is generally like the white of an Egg; when it is small it sometimes disperses of itself; Pressure and sudden Blows do also remove it, but for the most part it continues, unless it be extirpated.

THE Dressing in these Cases does not at all differ from the general Methods of treating Wounds.



C H A P. XXVI.

Of the Amputation of the Cancer'd and Schirrous BREAST.

THE Success of this Operation is exceeding precarious, from the great Disposition there is in the Constitution after an Amputation, to form a new Cancer in the Wound, or some other

Part of the Body. When a Schirrus has admitted of a long Delay before the Operation, the Patient seems to have a better Prospect of Cure without danger of a Relapse, than when it has increased very fast, and with acute Pain. I cannot however be quite positive in this Judgment, but upon looking round amongst those I know who have recovered, find the Observation so far well-grounded. There are some Surgeons so disheartened by the Ill-success of this Operation, that they decry it in every Case, and even recommend certain Death to their Patients, rather than a Trial, upon the supposition it never relieves; but the Instances where Life and Health have been preserved by it, are sufficiently numerous to warrant the Recommendation of it.

THE Schirrus may be distinguished by its want of Inflammation in the Skin, its smoothness and slipperiness deep in the Breast, and generally by its pricking Pain, which as it is more or less, increases the danger accordingly, though there are some few with little or none in the beginning: As the Tumour degenerates into a Cancer, which is the worst degree of Schirrus, it becomes unequal and livid, and the Vessels growing varicous, at last ulcerates.

IN extirpating the Schirrus, if it be small, a longitudinal Incision will dilate sufficiently for

the Operation, but if too large to be dissected out in that manner, an oval Piece of Skin must be cut through first, the size of which is to be proportioned to that of the Tumour; for example, if the Swelling is five Inches long, and three broad, the oval piece of Skin cut away must be nearly of the same length, and about an Inch and a half in breadth. In taking off the whole Breast the Skin may be very much preserved, by making the Wound of it a great deal less than the Basis of the Breast, which must be carefully clear'd away from the Pectoral Muscle: This is not difficult to do, because all these Schirrus's being enlarged Glands, are encompassed with their proper Membranes, which make them quite distinct from the neighbouring Parts, and easily separable; at least this is the case when the Tumour is moveable, for sometimes it adheres to the subjacent Muscle, and that Muscle to the Ribs; in which circumstance the Operation is impracticable. When it is attended with Knots in the Arm-pit, no service can be done by Amputation unless the Knots be taken away, for there is no sort of dependence to be laid on their subsiding by the discharge of the Wound of the Breast: The possibility of extirpating these Knots, without wounding the great Vessels, is very much question'd by Surgeons; but I have

done

done it when they have not laid backwards and deep.

THE Bleeding of the large Arteries is to be stopp'd by passing the Needle twice through the Flesh, almost round every Vessel, and tying upon it, which will necessarily include it in the Ligature. In order to discover the Orifices of the Vessels, the Wound must be clean'd with a Sponge wrung out of warm Water.

THE schirrous Tumours that appear about the lower Jaw are, generally speaking, scrophulous Disorders, that distinguish themselves almost by the circumstance of fixing on the Salivary Glands. These are very stubborn of cure, but not so bad as the Schirrus, since they frequently suppurate, and heal afterwards: If they imposthume again after healing, 'tis for want of a good bottom, which may sometimes be procur'd by destroying their bad Surface with a Caustick, and is a Method I have often practis'd with extraordinary Success. Besides these, there is another Species of Schirrus in the Neck, that succeeds better after Extirpation than either of the former kinds; this is an Enlargement of the Lymphatick Glands, that run close up by the Jugular Vein, and is distinguishable from Cancers of this part, by its Moveableness, want of Pain, the Laxness of the Skin covering it, the small degree of Pres-

sure it makes on the *Æsophagus* and *Trachea*, and lastly the good habit of Body, as it seldom affects the Constitution, which Cancers here do very early after their first appearance. This Tumour, from its Situation, requires great Exactness in the cutting off; the last I took away of this kind, I separated from the Jugular Vein near the length of an inch and a half: they sometimes extend up to the Chin towards the Mouth, and occasion a Division of the Salivary Duct in operating, which proves very troublesome to heal, but when all other Methods have fail'd, may be cur'd by a Perforation into the Mouth, through that part of the Cheek where it is wounded, which by a Tent or small Seton may be made Fistulous, then by dressing upon the Outside, the Ouzing of the *Saliva* that way will be prevented, and the external Orifice healed without difficulty.

THE Treatment of all these Wounds may be with dry Lint first, and afterwards as in the common incised Wounds.



C H A P. XXVII.

Of the Operation of the TREPAN.

THE Operation of the *Trepan* is the making one or more Orifices through the Scull, to admit an Instrument for raising any pieces of Bone that by Violence are beat inwards upon the Brain, or to give issue to Blood or Matter lodged in any part within the *Cranium*.

FRACTURES of the Scull are at all times very dangerous, not in consequence of the Injury done to the *Cranium* itself, but as the Brain becomes affected either from the Pressure of the fractur'd Bone, or that of the extravasated Blood and Matter. If then the Symptoms excited by a Fracture do sometimes follow from a mere Extravasation of Blood, as is the Case when the *Cranium* is not beat inwards, it must likewise happen that a Rupture of the Vessels of this part, without a Fracture, will also occasion the same Disorders: For this reason the Operation may take place where the Scull is not much offended, but only the Vessels of the *Dura Mater* and *Pia Mater*.

THE

THE Writers on this Operation have described the different Disorders in which it is useful, under a great variety of Names; but those few general ones that all Surgeons are acquainted with, are quite sufficient for the understanding the nature of every Case that can happen.

WHEN the *Cranium* is beat inward without any Fracture, it is call'd a Depression; when very much broke, a Fracture; or if broke and beat in also, a Fracture with Depression; if it is only crack'd, without Depression, though properly a Fracture, it is call'd a Fissure; if none of these Disorders appear, where there is a suspicion of them, the Symptoms are imputed to a Concussion of the Brain. These are the four Distinctions in use, and which fully comprehend all the others.

THE Depression of the *Cranium* without a Fracture, can but seldom occur, and then it happens to Children whose Bones are more pliable and soft than those of Adults: I have met with one Instance of this myself in a Girl of seven Years of age; when she first receiv'd the Injury, she had the Complaints of an oppress'd Brain, but they soon went off; the Blow form'd a large Tumour on the Parietal Bone, for which she was put under my Care

some

some Days after the Accident; I open'd immediately into it, by cutting away a circular piece of the Scalp, and took out a great quantity of grumous Blood lying underneath the *Perioſteum*; I then dress'd the Depreſſion with dry Lint, and finding no Complaints come on, continued the ſame Method, 'till in about fix Weeks ſhe was perfectly cur'd.

IN Blows of the *Cranium* requiring the uſe of the Trepan, the Marks of a Fracture are generally very evident, ſince the Scalp is often lacerated ſo much as to expoſe it to our ſight: But if the Wound of the Scalp be ſo ſmall as only to admit a Probe, we muſt judge then by the Feel of the Surface of the Bone, uſing the Caution of not miſtaking a Suture for a Fracture, which *Hippocrates* confeſſes he himſelf did; though for his frank Confeſſion of an error, to prevent others being miſled, he is as much recommended to Poſterity, as for any of his other qualities.

IF there be no Wound of the Scalp, you muſt preſs about the Head with your Fingers, 'till the Patient complains of ſome particular Part, which in all likelihood is the place affected, and if the Scalp there be ſeparated from the *Cranium*, is almoſt infallibly ſo: The Symptoms of a Fracture are, a Bleeding at the Ears,

Ears and Nose, a loss of Sense, Vomitings, Drowfiness, Delirium, Incontinence of Urine and Excrement; but what is most to be depended upon is a Depression of the Bone, or a Roughness on its Outside; for all the other Complaints not only happen to Concussions, which recover without the Application of a Trepan, but likewise there are Fractures not attended with any of them, or at least in a slight degree; so that these Symptoms alone, without examination of the Part affected, are but an uncertain Rule to go by.

IN Concussions without a Fracture, that produce the Symptoms here laid down, and do well afterwards, the Vessels of the Brain and Membranes are only inflam'd and dilated; or if they are ruptur'd, they absorb the extravasated Blood again; on which account Nature should be assisted by plentiful Bleedings, Clysters, and other Evacuations, and so in all Fractures where the Patient is not trepan'd immediately; however, although People with Concussions in the violent degree I have stated do sometimes recover, it is so very seldom, that there can be no pretence, when they happen, for neglecting the Trepan, but not being able to learn in what Part the Concussion is. The opportunities I have had of opening some People who

who have died under this Circumstance, have sufficiently convinc'd me how little is to be trusted to any other Method than an Opening for the Discharge of the Abscess, which by confinement of the Matter becomes very large, spreading over a great quantity of the Brain before it kills.

WRITERS dispute very much about the possibility of the *Contra-Fissure*, or a Fissure occasion'd on a part of the Head opposite to that on which the Blow is given, or where the inner Table is fractur'd, while the outer one remains intire; but there are Histories of Cases, which, if fairly stated, make it unquestionable; and this is most certain, that if the Complaint be at a distance from where the Blow was receiv'd, there can be no danger in scalp-ing, and applying the Trepan to that part where the Pain is.

THERE are Surgeons who say that the Vessels of the *Diploe* do sometimes by a Concussion break, and that the Matter making its way through the inner Table of the Scull into the Brain, requires the Trepan; but I believe there is no very good Authority for this Assertion.

WHEN we are assur'd of a Fracture or Depression, though the Symptoms in a great measure

sure go off, it is yet adviseable to trepan as soon as possible, to prevent the spreading of the Abscess, which seldom fails to follow upon the Rupture of the Vessels of the Brain and Membranes, and for the most part in a few Days, though there are a great many Instances of Fractures not bringing on a fatal Abscess for a great length of time after the Accident.

I ONCE trepan'd a young Woman about a hundred Days after she receiv'd the Blow; the lower part of the Parietal, and upper part of the Temporal Bones, were fractured and depressed; she had bled at the Nose and Ears when she first received the Injury, and had at times been drowsy, and in some little Pain, 'till towards the ninetieth Day, when the Symptoms of a compress'd Brain came on stronger, and a small time after she put herself under my care; which, with the many Instances of the same kind to be met with in Authors, shew how little safe it is to trust to any Extravasation or Depression on the Brain doing well without the assistance of the Trepan.

THE manner of treating a Fracture of the *Cranium*, will be according to the nature of the Fracture itself, and the Injury of the Scalp; if the Wound of the Head be tore into Angles, perhaps cutting off the lacerated Flaps will make

make room for the Saw; if the Bone be broke into several pieces, the pieces may be taken away with the Forceps; or if some of the Skull be also depress'd, the removal of the pieces will, without perforating, make way for the Elevator to raise the depress'd part; but if the Fracture be not complicated with a Wound of the Scalp, or the Wound is too small to admit of the Operation, which seldom fails to be the Case, then the Fracture must be laid bare, by taking away a large piece of the Scalp. It is a fashion with some Surgeons to make a crucial Incision for this purpose, which they prefer to the other Method, upon the supposition that the Wound will more easily heal again after the Operation, by turning down the Flaps, and in case we find no Fracture, which sometimes happens after scalping, that by making this Species of Wound, an Exfoliation of the Bone, and tediousness of Cure will be avoided. But whoever has seen the Practice of the crucial Incision, must be sensible of the false Reasoning us'd in its favour; for it seldom happens that we inquire for a Fracture of the Skull by scalping, but that the Scalp itself is concus'd, which Circumstance generally bringing on a plentiful Suppuration, and the Matter lodging between the *Cranium* and Skin, not only prevents

vent their immediate healing, but generally occasion a Caries of the Bone, which is the Accident meant to be shunn'd by it, and frequently at last the Lips of the Wound growing callous, require cutting off to procure a Cicatrix. If then the Objection be good to the crucial Incision when no Operation is perform'd, it becomes of so much more force when we are assur'd of using the Trepan, that I think it is indisputably right at all times to take off the Scalp, when we lay bare the *Cranium* with a view to the Operation, which seldom fails to granulate with Flesh in a few Days, if dress'd only with dry Lint, and rarely grows carious, if not affected by a great Discharge of Matter from the Brain, and even in that case but superficially; or if after it is thus expos'd, new Flesh should not generate upon its Surface, the growth of it may be quickened by boring little Orifices into the Substance of the Bone, or rasping it with the Rugine. The form of the piece taken away may be nearly circular, and to be better assur'd of the course of the Fracture, it will be proper it should be of the whole length of it. I believe there are few will care to expose so much naked Scull, but whoever knows the great Advantage and the little Danger of it, will not hesitate. When the Scalp is remov'd, the *Periosteum* must be raised,

raised, and the Arteries immediately tied, which will make way for the Operation to be directly perform'd; though the Effusion of Blood has been esteem'd so troublesome in this Part, as to have made it almost an universal Practice to postpone the use of the Trepan to the Day after; but the Apprehension is without foundation, for if two or three of the larger Vessels are tied, the others may easily be stopp'd with a little dry Lint, and the Operation take place without any Inconvenience, which I have always done myself, and would recommend to others, considering how urgent the Nature of the Distemper is, and that less than twenty-four Hours is often the difference between Life and Death, when the Brain is much press'd by a fractur'd Bone.

BEFORE the Application of the Trepan, it is to be remembred there are certain Places on the Scull where it cannot be used with so much safety as on others; the whole length of the Sagittal Suture, down to the Nose, is always mention'd as one where the Perforation is dangerous, because of the Spine of the *Os Frontis*, and the course of the superior longitudinal *Sinus* under this Part, which it is suppos'd would be necessarily wounded by the Saw, and in consequence destroy the Patient by the

Hæmorrhage; but though a Perforation may, contrary to the general opinion, be made over the *Sinus* without offending it, and even if it was wounded, the Effusion of Blood would not in all probability be mortal, as I have seen in two Instances: Yet at best it would be very troublesome, and since we are not straitned in that part of the *Cranium* for room, I think it is adviseable to forbear operating in that Place. The bony *Sinus's* of the *Os Frontis* forbid the use of the Trepan near the Orbits of the Eyes, therefore if it should be depress'd near those Cavities, the Surgeon must be careful to perforate either above, or on one side of the Fracture, for Sawing below it will only lead into the *Sinus*, and answer no purpose in the design either of giving a Discharge to the Matter from the Brain, or an opportunity to elevate the Depression; nay perhaps leave an incurable Fistula, if the Patient escapes with Life.

THE *Os Occipitis* being very uneven, both in its internal and external Surface, makes Trepanning there almost impracticable; besides the great *Sinus's* run about so much of it, as hardly to afford space to perforate without danger of wounding them; but then it is so defended from Injuries by its Situation and Strength, that Fractures do not happen to it so often as to
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the other Bones of the *Cranium*; and when they do, for the most part they become so soon mortal by affecting the *Cerebellum* which it sustains, that the Operation is seldom required in this case. Indeed the upper Angle of this Bone lies above the *Cerebellum*, and when fractur'd or depress'd, is not attended with so immediate danger, but when this happens, the course of the longitudinal *Sinus* down through the middle of it, and the neighbourhood of the lateral *Sinus's* beneath it, make it adviseable to trepan at the lower part of the *Os Parietale*, or at least upon or just below the Lamdoidal Suture, so that the Perforation of the *Os Occipitis* can hardly ever be proper.

It may be observed I have spoke of Wounds of the *Cerebellum* as proving inevitably mortal, when affected by a Fracture: How long a Patient may continue with Matter on its Surface, I cannot take upon me to say, but I believe there is no Instance of a Cure after an Abscess, and as for Wounds of it, they are almost instantaneous Death. From this great difference of Danger in Affections of the *Cerebrum* and *Cerebellum*, has arose the opinion that the first is the Organ of Animal Motion only, and the other of Vital.

THE Places then unfit to admit the Saw are the three I have described, that is, the Sagittal Suture, the *Os Frontis* near the Orbits of the Eyes, and the *Os Occipitis*. But when a Fracture happens in any other part above the Ear, there is no Objection to the Operation. When there is only a small Fissure, without any Depression or Motion in the Bone, the Trepan may be applied on the Fissure itself, which will more readily give vent to the Blood or Matter underneath, than if made at a distance. If the Fissure be large, and the Bone weaken'd or depress'd, the Trepan must be apply'd on one side of it, but so as to make it a part of the Circumference of the saw'd Piece; if the Fracture runs upwards, it will be eligible always to perforate near its bottom, because the dependency of the Orifice will give better Issue to the Matter, though the ill-grounded Apprehension of the Brain falling out there, has made many eminent Surgeons contradict this Rule in their Practice. If by making one Orifice you cannot raise all the depress'd part, you must make a second and a third, and continue doing so 'till you have reduc'd the whole *Cranium* even; there is frequently occasion to repeat it twice or thrice, and it has been done twelve times, nay oftener, with Success, which I mention

I mention to shew the little danger there is either in sawing the Skull, or exposing the *Dura Mater* and Brain, when the Pressure is taken off. Indeed the mischief of laying the Brain bare is so small, compar'd with a Concussion of it, or an Abscess from pent-up Matter, that those Fractures of the Skull, where the Bone is broke into Splinters the whole extent of it, and can be taken away, much more readily do well than a simple Fissure only, where the Abscess cannot discharge itself freely, for which reason though the depress'd Fracture may be rais'd by the means of one Orifice, yet if it is of a considerable length, it will be almost absolutely necessary to make one or two more Openings for the convenience of Discharge, since for want of this we see Abscesses increase daily in their quantity of Matter, and at the end of a few Weeks carry off the Patient. Those that are conversant in the Dissection of Persons dying of this Disorder will be convinc'd of the force of this Reasoning, since they not only constantly find *Pus* lodged on the Brain, as far as the Fissure extends, but all round about it, sometimes spreading over a quarter of its Surface.

IN Concussions of the Brain, without a Fracture of the *Cranium*, if the Trepan be ap-

ply'd, and vast Discharges ensue, it will be also convenient to make more Perforations into the Abscess, the situation of which will be easily guessed by the direction of the Stream of Matter.

THE Manner of Trepanning is this: Having fix'd your Patient's Head steady, either on the Bolster of a Bed, or by placing him in a low Chair, with the Pin of your Saw mark the Center of the piece of Bone to be taken out, then with the Perforating Trepan make an Orifice deep enough to receive the Pin, which being fixed in it, will prevent the Saw from slipping; and thus you are to continue sawing 'till the Impression made will preserve the steadiness without the Pin, when it is to be taken away for fear of its wounding the Brain before the Saw has entred through the *Cranium*, which it would do at last because of its Projection. In working through the Bone, the Teeth of the Saw will begin to clog by that time you arrive to the *Diploe*, wherefore a Brush must be ready to clean it every now and then, and with a pointed Probe you must clear away the Dust in the Circle of the Trepan'd Bone, observing if it be deeper on one side than the other, to lean afterwards on that side where the Impression is least,
that

that the whole thickness may be saw'd thro' at the same time. To do all this with less Interruption it will be proper to have two Saws of exactly the same Diameter, that an Assistant may be brushing one while you operate with the other. We are advis'd to saw boldly 'till we come to the *Diploe*, which it is said will always distinguish itself by the Bloodiness, but however this is not a certain Mark to go by, for though where there is a *Diploe*, it will manifest itself by its Bloodiness, yet sometimes the Scull is so very thin as not to admit of any; in which case if an Operator should push on his Instrument in expectation of meeting with this Substance, he would unwarily wound the Brain. This is not very often the Case, but however often enough to put a Man on his guard, and make him enquire whether the Bone be loose after a little sawing, which is the only Rule we go by when we have pass'd through the *Diploe*, and may as well be attended to before coming at it, without any considerable loss of time. When it is quite saw'd through and lies loose, it may be taken away with the Forceps, contriv'd for that use, and if the lower Edges of the Orifice next to the *Dura*

Mater are splinter'd, they may be scrap'd smooth with a Lenticular.

T H I S is the chief of the Operation of the Trepan; the only thing remaining to be done, is with an Elevator introduc'd at the Orifice to raise the Depreffion, or broken Splinters if they cannot otherwise be laid hold of, and to draw out the grumous Blood, or any other extraneous Body. If the *Dura Mater* be not wounded or tore, an Incision must be made through it to give way to the Blood or Matter, which almost certainly lie underneath it, if the Symptoms have been bad, and none has been discharg'd from between the *Cranium* and *Dura Mater*.

I H A V E us'd the Word Trepan all along, for the sake of being better understood, but the Instrument I recommend is a Trepine, the Advantages of which, as also that of a Cylindrical Saw, or one nearly Cylindrical, are described in the Explanation of the Copper-Plate.

W I T H regard to the Dressings of these Wounds, I think it is very certain that as the greatest part of the Evil proceeds from the quantity and pressure of the Matter, whatever approaches towards the Nature of a Tent, and increases its quantity and pressure by locking

it up, must be pernicious: Therefore I would exclude the use of all Syndons whatever, the hasty Application too of Spirits of Wine which is so commonly advis'd, cannot be proper, as they are not only unfit for Inflammations in general, but also crisp up the Vessels of the *Dura Mater* and Brain, and stopping the Suppuration sometimes produce a Gangrene. Since then a Close Application is inconvenient, and whatever good there may be in Topical Medicines, it cannot for the most part be communicated to the Abscess, by reason of its extent beyond the Orifice; the best Remedy will be dry Lint only, which must be laid on loosely to give vent to the Matter, and be repeated twice a-day 'till the Discharge is lessen'd, when once in twenty-four Hours will be sufficient to the finishing of the Cure, which will be something retarded by the Exfoliations that sometimes follow this Operation. The Patient afterwards may wear a Plate of Tin upon the Scar to defend it from Blows, or any accidental Injury.

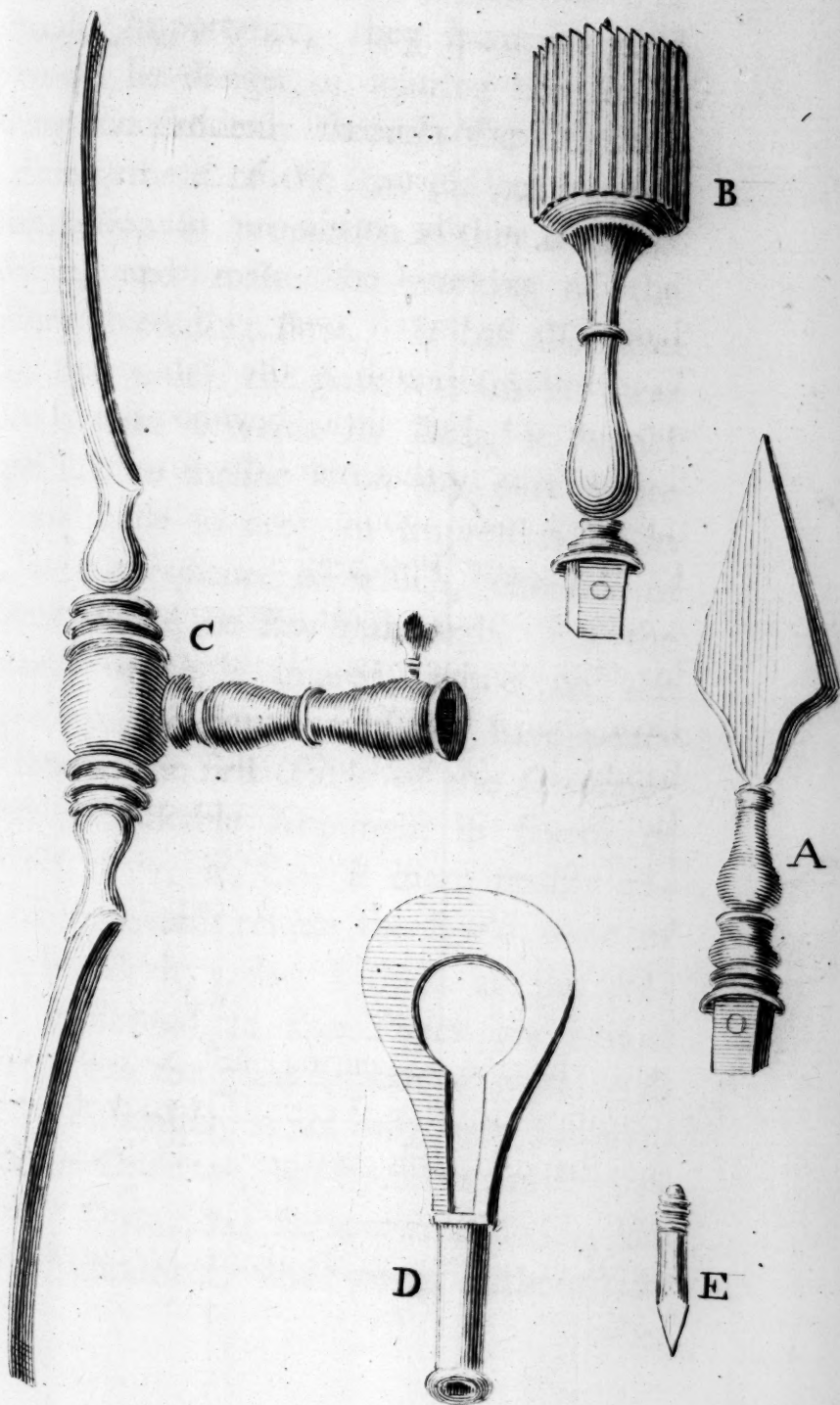


P L A T E VIII.

The E X P L A N A T I O N.

A. The Perforator, commonly call'd the Perforating Trepan. With this Instrument an Orifice is usually made for the Reception of the Pin on the Center of the piece of Bone that is to be taken away, in the Operation of Trepanning; though if the Pin be very sharp, and project but little beyond the Teeth of the Saw, as in that mark'd with the Letter *B*, the Perforator would be needless; but as the Point of the Pin presently grows blunt with use, and in that case prevents the Steadiness in working the Saw, I think it adviseable to have this Instrument in readiness. It is also handy for boring into the Substance of the Bones, in order to promote a Granulation of Flesh on their Surfaces: When it is made use of, it must be receiv'd and fasten'd in the Handle *C*.

B. The Crown, or Saw of the Trepan, with the Pin appearing just beyond the Extremities of the Teeth. It may be observ'd the shape of this Saw is Cylindrical, differing from those in use, which are all Conical, and some in a very great degree. Surgeons have generally



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generally conceiv'd great Advantages to arise from this Form: First, as a Circumstance of the utmost Importance, they have imagin'd there would be danger of injuring the Brain, by sawing too suddenly through the *Cranium*, if the Enlargement of the Saw did not increase the Obstruction in proportion as they advanc'd towards it, and make the working of the Instrument exceeding slow. It has also been believ'd, that unless the Saw was smaller near the Teeth than towards its Basis, it would be impossible to incline it on any part where it had not made so deep an Impression as in others; in consequence of which, one side of the Circle wou'd be saw'd through, and the Membranes or Brain injured, while on the other perhaps the Saw would not have penetrated through the first Table of the *Cranium*: The last remarkable Argument in favour of the Conick Saw, is, that it more readily admits, and afterwards retains the saw'd piece of Bone in its Cavity: But I think all the Advantages attributed to this Figure are almost imaginary; and the great Labour of working so slowly and difficultly, is not only very inconvenient to an Operator, but by no means serviceable to the Operation; for notwithstanding the Saw be Cylindrical, and works without any other

other Impediment than what lies before the Teeth, yet even with this Advantage the Operation goes on so gradually, that from the Experience I have had, I do not find the least danger of suddenly passing through to the Brain as is apprehended, if we proceed with the Caution of not leaning too hard on the Instrument when the Bone is almost saw'd through and with respect to the Impracticableness of inclining it on any particular part of the Circle when saw'd uneven, which is commonly alledged, whoever will try the Experiment will in a moment discover the Falseness of the Assertion; besides, the very Instance stated overthrows this reasoning, for if the Circle has been already made deeper in one part than another, it must imply that we have lean'd with more force on one part than another, and consequently may at pleasure do the same thing again: As to the last supposed Advantage of its receiving and retaining the saw'd piece of Bone in its Cavity, the Benefit would be so frivolous, if it had truly the preference of the Cylindrical one in that respect, that it would not be worth mentioning, but in fact the Cylindrical Saw receives the piece of Bone very readily, and will be more likely to hold it in its Cavity than the other, because there

will

will be more Contact between the Edges of the Bone and the Inside of the Saw.

C. THE Handle of the foregoing Instrument, call'd the Trephine, which is much preferable to the Trepan, (an Instrument like a Wimble us'd by Joiners) because of the great convenience of holding it, and leaning on one side or other of the Saw, as we find necessary: The Trepan however, though allow'd to be unhandy, is the Instrument most us'd by Surgeons in other Parts of *Europe*, upon the supposition of its working quicker than the Trephine.

I HAVE represented the Trephine of such Shape as to make it a convenient Elevator, for which purpose the Extremities of it are made rough.

D. A Key to take out the Pin *E*, when the Saw has made an Impression deep enough to be work'd without the help of it.

E. THE Pin.



P L A T E IX.

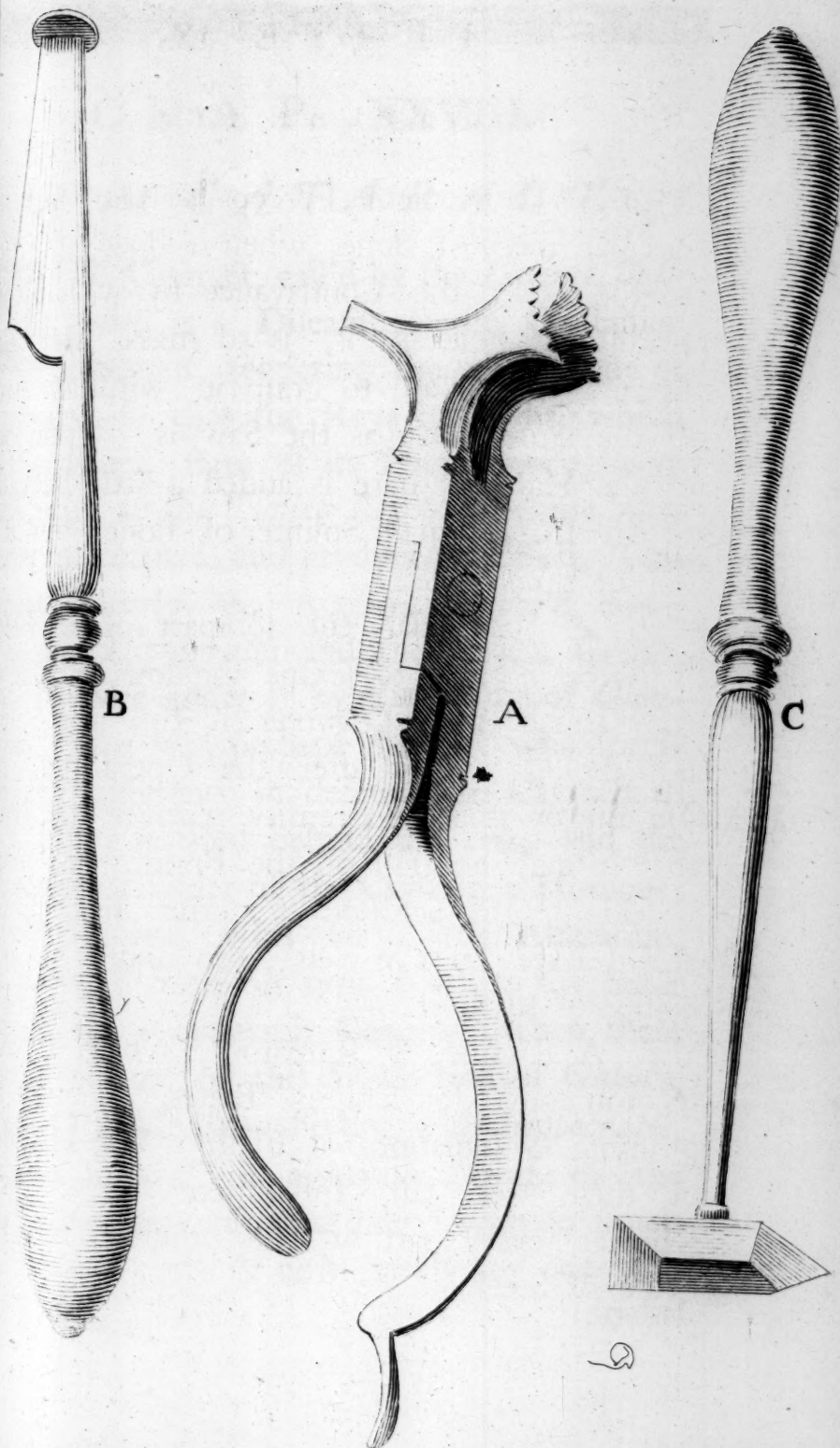
The E X P L A N A T I O N.

A. A convenient Forceps to take out the circular piece of Bone, when it does not stick to the Saw; the Contrivance by which they readily lay hold of it, is to make the Extremities that are to grasp it, with an Arc of the same Circle as the Saw is. Upon one of the Handles there is added a little Elevator to lift up any small Splinter of Bone, but it is not of much use.

B. A Lenticular, the forepart of its Blade is sharp, in order to scrape the lower Edge of the Orifice of the *Cranium*, in case any Splinters should remain after the Operation, and the Button at its Extremity receives the Dust that it may not fall on the Brain; but there is seldom any occasion for this Instrument and I have never myself been under the necessity of using it.

C. A Rugine, or Raspatory, which I have recommended for scraping Bones, in order to promote Granulations of Flesh. The Handles of these two last Instruments are Wood, whereas every part of the others should be made of Steel.

C H A P





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C H A P. XXVIII.

Of the CATARACT.

THE Cataract, call'd by the *Latines*, *Suf-fusio*, is a Disease of the CrySTALLINE Humour, rendering the whole Body of opaque, so that the Rays of Light, which in the natural state of its Transparency, were transmitted to the *Tunica Retina*, become now totally intercepted, and produce no Effect. This pretty nearly the Account deliver'd down to us by *Hippocrates* and the antient *Greeks*, who likewise knew it by the Name of *Glaucoma*. *Galen* was perhaps the first who specified any difference in defining the Cataract to be a Film, situated behind the *Iris*, and the *Glaucoma* a disorder of the CrySTALLINE Humour; which Opinion, with very little Alteration, has prevail'd from his time down to the latter end of the seventeenth Century, when there arose a dispute on this Distinction of *Galen's*, some of the Moderns asserting with *Hippocrates*, that the Cataract is always a Disease of the CrySTALLINE Humour, and indeed with so much reason, that there is now hardly any one who doubts

doubts it: However for forty Years last past this Subject has produced many Arguments on both sides.

THE Mathematicians having observed in those who have been couch'd, that the defect of Sight remaining after the Operation, answers nearly to what in Optics the removing the Crystalline Humour would occasion, have endeavoured to prove that the Operation must in consequence be, the depressing that Humour, and leaving the Eye to perform its Function afterwards with the Aqueous and Vitreous only; which wanting the Density of that Humour, will not refract the Rays sufficiently to re-unite them on the *Retina*; whence Patients after their Cure are obliged to use Convex Glasses, as Substitutes for the depressed Crystalline Humour.

Dr. PETIT, a most accurate Anatomist of *Paris*, has from a critical Examination of the Figure of the Eye, argued against the possibility of a Film's existence in the Posterior Chamber, by reason of the smallness of that Chamber, or Proximity of the Crystalline Humour to the back of the *Iris*; and again from the Impracticability of dislodging such a Film without offending the sound Crystalline Humour.

LASTLY

LASTLY, and what is more certain, Anatomists have frequently dissected the Eyes of Persons under this Disorder after their Death, and have found it to be always an Opacity of the Crystalline Humour, agreeable to the Definition of a *Glaucoma*, so that by consequence we must understand the Words *Cataract* and *Glaucoma* as synonymous Terms, since they are in fact but one and the same Disease.

I THINK it needless to state the Reasons on the other side of the Question, as they are of little weight, and indeed almost universally exploded.

IN describing the Nature of a Cataract, it has hitherto been a positive Maxim laid down by Oculists of every Nation, that there is one certain Stage of the Distemper, in which only the Operation is proper, and this state of the Disease is said to be the Maturity of the Cataract: They have compar'd it to the ripeness of Fruits, and have suppos'd a regular Change in the consistence of the Crystalline Humour from the moment it is affected. They say the Disease upon its first Invasion gradually liquefies the Humour, and that after its Arrival to the utmost period of Liquefaction, it then begins to acquire various degrees of

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Tenacity, 'till at last it becomes perfectly hard, or as they stile it, horny: That the Skill of the Surgeon discovers itself by fixing on that time for the Operation, in which the Fluidity of the Cataract is no obstacle to the Depression of it, from its want of resistance to the Needle; nor its hardness, from the Elasticity of its connecting Fibres, which not being thoroughly broke, immediately return it to its former position.

THIS, in a few Words, is the general Doctrine; but I think the regular Alteration of the Density of the Crystalline Humour is very much to be doubted, and for my part I cannot help positively excepting to the Rule here laid down; having not only seen Cataracts of twenty or thirty Years growth, often upon the Touch of the Needle prove soft and milky, but also many Instances, in which a due degree of Consistence occur'd after four or five Months, I may venture to say Days, when the Cataract was the consequence of a Blow or Puncture; both which Cases so little correspond with this suppos'd Change, that they seem not only to overthrow it, but to imply, that the Cataract, after it has acquir'd its total degree of Opacity, may frequently, if not generally, continue in the same state of

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Tenacity to the Life's end: And tho' I will not take upon me to affirm that Cataracts come always very early to their greatest Consistence, yet this we may safely deduce from these Observations; that whenever they become entirely opaque, we may properly undertake the Operation; which has been my Method of Practice hitherto, nor do I find any reason to lay it aside.

SINCE then the *Glaucoma* is no other Disease than the Cataract, we must at once discard the distinction of these two Distempers as merely imaginary; and from what has been said with regard to the Consistence of a Cataract, that whatever it be, the removal of the Humour is the sole end of the Operation, the distinction of a true and false Cataract will appear equally frivolous; and consequently most of the Subdivisions comprised under this last, such as the Bag, the Milky, the Purulent, the Doubtful, the Membranous, the Fibrous, the Shaking, and many more in the Books on this Disease; the greatest part of which are Names that puzzle the Memory without informing the Understanding; and indeed have not a sufficient foundation in Nature, but owe their diversity of Character more to the Imagination of Writers than any real Variety in the Disease.

THE general Criterion of the fitness of Cataracts for the Operation is taken from their Colour; the Pearl-colour'd, and those of the Colour of burnish'd Iron, are esteem'd proper to endure the Needle; the White are suppos'd milky, the Green and Yellow horny and incurable: The Black Cataract is describ'd by most Authors, but I dare say, has been mistaken for a *Gutta Serena*, where no Disease appearing, the Pupil seems black as in a natural state of the Eye: And as to the Green one I have not as I remember, in a great number of Cataracts, met with a single Instance of it, but possibly it may be in Nature, and one would indeed imagine the Describers of it could not be mistaken in what must have been so evident.

THE Depression of a Cataract of any Colour would be the Cure, if that alone was the Disorder of the Eye, but it generally happens that the Yellow ones adhere to the *Iris* so firm as to become immoveable; besides, when they follow in consequence of a Blow, which is often the case, either the Cells of the Vitreous Humour are so much disturb'd and broken, or the *Retina* affected, that a great degree of Blindness will remain though the Cataract be depress'd, and that one Cause remov'd.

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To judge whether the Cataract adheres to the *Iris*, if you cannot at once distinguish it by your Sight, shut the Patient's Eye, and rub the Lids a little; then suddenly opening it, you will perceive the Pupil contract, if the Crystalline Humour does not prevent the Action by its Adhesion: And when this is the case in any kind of Cataract, the Operation can hardly be advis'd, though I once did it with success on a Person who had been Blind thirty Years. It is the only Trial I ever made on a Cataract I knew to be adherent, and I should not have been tempted then, but that it look'd very firm, and I thought the Adhesion slight, as in fact it prov'd.

ANOTHER Consideration of the greatest moment, before undertaking the Cure, is to be assur'd of the right state of the *Tunica Retina*, which is very readily learnt, where there is no Adhesion of the Cataract, from the Light falling between the *Iris* and Crystalline Humour, which if the Eye is not sensible of, it is a certain Indication of another Malady, and absolutely forbids the Operation. Generally this Cataract takes its rise from Head-achs, Convulsions, and nervous Disorders. How the Eye perceives in this case, *vide* the Copper-plate.

THE Operation for the soft Species of Cataract, which may perhaps properly be stiled Milky, has been by some Writers falsely said never to succeed. Of this there are two sorts; some, which are almost uniformly soft, and admit the Needle through them as through Water, consequently are immoveable; and others where the Humour is liquefied, and contained in its own Membrane, now pretty much thickened by the Disease, which last frequently does well; for upon breaking the Membrane, the Fluid bursts out and precipitates, and the Membrane itself, if it is not depress'd, in process of time shrinks into a small compass, or wastes quite away.

WHETHER the whole Cataract after its subsiding continues to lie at the bottom of the Eye, or is quite wasted by being separated from its Vessels, I have never had an Opportunity of knowing positively by dissecting one that had been couch'd; but by what we see of those that have not been totally depress'd below the Pupil, and continue in that state for ever after, we may suppose that they only waste a little: I know one Instance of a Woman whose Cataract after couching became quite loose in the Eye, and in an erect posture sunk to the bottom, but by stooping the

the Head forward she could bring it quite over the Pupil.

WHEN none of the Objections I have stated forbid the Operation, it may be thus done: Having plac'd your Patient in a convenient Light, and in a Chair suitable to the height of that you yourself sit in, let a Pillow or two be placed behind his Back, in such a manner that the Body bending forward, the Head may approach near to you; then inclining the Head a little backward upon the Breast of your Assistant, and covering the other Eye so as to prevent its rolling, let the Assistant lift up the superior Eyelid, and yourself depress a little the inferior one: This done, strike the Needle through the *Tunica Conjunctiva*, something less than one tenth of an Inch from the *Cornea*, even with the middle of the Pupil, into the posterior Chamber, and gently endeavour to depress the Cataract with the flat Surface of it. If after it is dislodg'd it rises again, though not with much elasticity, it must again and again be push'd down; if it is membranous, after the discharge of the Fluid, the Pellicule must be more broke and depress'd; if it is uniformly fluid, or exceeding elastick, we must not continue to endanger a terrible Inflammation by a vain attempt

to succeed. If a Cataract of the right Eye is to be couch'd, and the Surgeon cannot use his left Hand so dextrously as his right, he may place himself behind the Patient and use his right Hand.

I HAVE not recommended the *Speculum Oculi*, (which we can't however well do without, unless the Patient resolutely determines to hold the Eye still) because upon the discharge of the Aqueous Humour through the Puncture, the Eye being somewhat emptied, more readily admits of the Depression of the Crystalline Humour than when press'd upon by the Instrument.


As to the Method of treating the succeeding Inflammation (when it happens, for sometimes there is none) I can advise nothing particular but to refrain from those *Collyria* that are charged with Powders; for the thinner parts flying off leave a gritty substance in the Eye, which must be pernicious: Bleeding, and other gentle Evacuations are found absolutely necessary. The use of cool Applications externally, is most easy to the Eye; but after all, there will sometimes ensue a troublesome Ophthalmia, which, with the uncertainty there always is of Success after the Operation, have deterr'd most Surgeons from undertaking it,
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and 'till lately from studying the nature of the Disease; But I fancy the Operation will come into greater Repute when more generally practis'd by Men of good Character, for it is less the Difficulty than the Abuse of it by Pretenders has brought it into Discredit.



C H A P. XXIX.

Of Cutting the I R I S.

 HERE are two Cases where this Operation may be of some service, one when the Cataract is from its Adhesion immoveable, and the other when the Pupil of the Eye is totally clos'd up by a Disorder of the Muscular Fibres of the *Iris*, which gradually contracting the Orifice, at last leaves the Membrane quite imperforate. This last Disorder has hitherto been deemed incurable. The Adhesion of the Cataract I have spoke of in the preceding Chapter, and consider'd it as a Species of Blindness not to be relieved: But Mr. *Chefelden* has invented a Method of making an artificial Pupil by slitting the *Iris* which

which may relieve in both the Instances here stated.

I N doing this Operation the Patient must be plac'd as for couching, and the Eye kept open and fixed by the *Speculum Oculi*, which is absolutely necessary here, for the very reason I would discard it in the other, since the Flaccidity of the Membrane from the Issue of the Aqueous Humour would take away its proper resistance to the Knife, and make it, instead of being cut through, tear from the *Ligamentum Ciliare*; then introducing the Knife in the same part of the *Conjunctiva* you wound in couching, insinuate it with its Blade held horizontally, and the Back of it towards you, between the *Ligamentum Ciliare* and circumference of the *Iris*, into the anterior Chamber of the Eye, and after it is advanc'd to the farther side of it, make your Incision quite thro' the Membrane, and if the Operation succeeds, it will, upon wounding, fly open, and appear a large Orifice, though not so wide as it becomes afterwards.

T H E Place to be open'd in the *Iris* will be according to the nature of the Disease, if the Membrane itself be only affected with a Contraction, the middle part of it, which is the natural situation of the Pupil, must be cut;
but

but if there be a Cataract, the Incision must be made above or below the Cataract, though I think it more eligible to do it above.

THE contracted *Iris*, from a Paralytick Disorder, is so often complicated with an Affection of the *Retina*, that the Success is very precarious in this Case. This Operation, by what I have seen, has answer'd best in Adhesions of the Crystalline Humour, though to speak truly, but very seldom even there. As I would not mislead any one who shall practise an Operation, not yet much known in the World, I do confess that either the danger of the *Iris* separating from the *Ligamentum Ciliare*, or of the Wound not enlarging sufficiently, do upon the whole make the Event very doubtful. I once perform'd it with tolerable Success, and a few Months after the very Orifice I had made contracted, and brought on Blindness again.

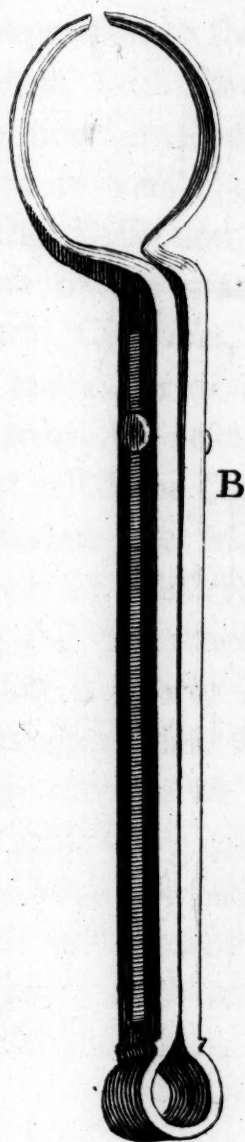
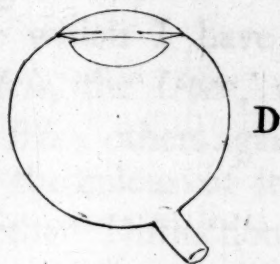
IN these two Chapters I have not once used the Word *Uvea*, but have made mention of the *Ligamentum Ciliare* two or three times; both which Parts are but little understood for want of proper Explanation; but which must be rightly conceiv'd of in order to understand what I have said upon these Diseases.

THE

THE generality of Anatomists call that Membrane which I have spoke of under the name of *Iris*, the *Uvea*, and its anterior *Lamina*, the *Iris*; others again call the Membrane *Uvea*, and the colour of it *Iris*; but both one and the other Distinction confound Learners exceedingly, and take their rise from a want of proper Attention to the History of Anatomy. The Ancients, who have given most of the Names we now employ in the Description of the Eye, were vers'd chiefly, if not altogether, in the Dissection of Brutes; amongst which those of the graminivorous kind have a party-colour'd *Choroïdes*, one half of it being dark, and the other of a light shining Green; this last, from its resemblance to an unripe Grape, was call'd the *Uvea*; but the succeeding Writers amongst the Moderns applying themselves to human Dissections only, and not duly considering the difference of the human *Choroïdes*, which is nearly of an uniform colour, and of that above described, have retained the Appellation, though we have not the Thing. Hence has arose the great variety of misapplication of this Word, which ought no more to be spoke of in the Anatomy of the human Eye, than the *Tunica Nictitans*, which is proper to certain Beasts and Birds.

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THE *Ligamentum Ciliare* is that circular Line on the Globe of the Eye where the *Sclerotis*, *Choroides*, *Retina*, *Cornea*, *Processus Ciliares*, and *Iris*, terminate, forming a whitish Ring somewhat denser than any other part of the Coats; but since the Institution of this Term, the Description of the Part it implies has been very much neglected, and the Term itself confounded with the *Processus Ciliares*; wherefore it was necessary to define it, that the Process of the Operation of the *Iris* might be better comprehended.

P L A T E X.

The EXPLANATION.

A. THE Couching-Needle, the broad part of which towards the Point is flat on one side, but on the other is a little convex, to give it more Substance and Strength.

THE Handle of this Instrument is white Ivory, inlaid with a Streak of black in that part of it lying even with the convex Surface of the Blade: The meaning of which is, that by holding the Handle with the Streak upwards, we may be guided to depress the Membrane of a milky Cataract with the flat Surface, though the Substance

Substance of the Cataract swimming in the Eye obscures the Needle, and prevents its being directed in a proper Position by the Sight.

B. A *Speculum Oculi*, which is made to open or shut by an iron Button sliding along a Slit in the Handle. This Instrument is compos'd of one piece of Steel, in such a manner that it would fly open by its Elasticity, if the two branches of the Handle were not confin'd by the Button. The Circle of it should be cover'd with Velvet, to make it lie softer on the Eyelids.

C. THE Knife for cutting the *Iris*, the Blade of which has but one Edge.

D. THE Figure of the Eye.

THE small Arch on the Forepart of the Figure, is the *Cornea*; the two straight Lines tending to each other are the *Iris*, and the Opening between them is the *Pupil*; the Space between the *Cornea* and the *Iris* is the anterior Chamber of the Eye; the Spheroidal Body is the *Crystalline Humour*; the Space between the *Iris* and *Crystalline Humour* is the *Posterior Chamber*; and the two short Lines which arise from the meeting of the *Cornea*, *Iris*, &c. and run upon the *Crystalline Humour*, are the *Processus Ciliares*. The Design of this Representation is to shew the Smallness of the Posterior Chamber, and how some Light may pass obliquely between

the *Iris* and Cryſtalline Humour, through the Interſtices of the Ciliary Proceſſes, and occaſion that degree of Sight which People with Cataracts have.



C H A P. XXX.

Of the FISTULA LACHRYMALIS.

THE *Fistula Lachrymalis* is generally underſtood to be ſuch a Diſorder of the Canals leading from the Eye to the Noſe, as obſtructs the natural Progreſs of the Tears, and makes them trickle down the Cheek: But this is only the firſt and mildeſt Stage of the Diſeaſe; in the next, there is Matter diſcharged with the Tears from the *Puncta Lachrymalia*, and ſometimes from an Orifice broke thro' the Skin between the Noſe and Angle of the Eye: The laſt and worſt degree of it is when the Matter of the Abſceſs, by its long Continuance, has not only corroded the neighbouring ſoft Parts, but alſo affected the ſubjacent Bone.

FOR the better underſtanding the Seat and Nature of this Diſtemper, I have here annexed a Representation of the *Lachrymal Ducts*.

IN

IN treating of the *Fistula Lachrymalis*, most Writers mention the Inflammation and Ulceration of the *Saccus* as being sometimes the immediate Causes of it; but then they all suppose that the Tears becoming acrid and corrosive, excite the Inflammation and Abscess; though many of them imagine that the Tears themselves not finding a way through the Nasal Duct, do from stagnating in the *Saccus*, corrupt and become the Matter discharged by the *Puncta Lachrymalia*; but the latter Opinion is most certainly ill-grounded; for besides that the Tears are not of a Composition to become Pus, it may be observed almost at any time upon pressing the Abscess, that the two Fluids appear unmixed; and with regard to the general Doctrine of the Sharpness of the Tears producing the Disorder, I think it is much to be question'd, since the *Cornea* and *Tunica Conjunctiva* being more sensible Membranes than the *Saccus*, would more readily be offended by them; but as we see they are not in the least injured, and every part of an Animal Body is subject to Inflammation, &c. from internal Causes, I believe this external one may be justly doubted.

WHATEVER be the Cause of the Inflammation, whether the Small-pox, *Lues Venerea*,

rea, &c. the Effect of it is an Obstruction of the *Ductus ad Nasum*. That a Total Obstruction should follow upon an Inflammation in so large a Vessel as the Nasal Duct, I presume is owing to its situation in the bony Groove of the *Os Unguis*, which not allowing it to dilate in its inflammation and thickening, must necessarily make it fill up the whole Channel, and cause that Regurgitation of Tears and Matter which is the constant Symptom of this Disease.

SOME Years since Monsieur *Annell* a French Surgeon recommended in the recent Fistula to pass a small Probe through one of the *Puncta Lachrymalia* into the *Saccus* and Nose, in order to break the Concretions which were suppos'd to make the Obstruction, and with a small Pipe and Syringe to throw an Injection thro' the other, in order to wash them away. This Method was at first received with great applause, and still continues to be practised by some very eminent Surgeons; yet by what I have been able to learn from the Experiments of others, and the reason of the thing, I am by no means inclined to think favourably of the Invention; for as the very characteristick of this State of the Fistula is the Reflux of the Tears from the *Saccus*, the Channels leading to it from the *Puncta Lachry-*

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Lachrymalia must be supposed clear; and as to the Obstruction in the Nasal Duct, an Injection thrown with so little force, can hardly be imagined sufficient to remove it, and still less, if it be true that the Obstruction is not owing to any loose Substance clogging up the Passage, but to an Inflammation of the Membranes.

IF then the Injection cannot assist by the force of its Stream, the Advantage must arise from its balsamick Qualities; but no Surgeon at this time dilates an Abscess of any kind by Injections when the *Pus* is good-conditioned, and he can by Compress diminish the Cavity of it, as may be done in this very Case, and which should be practis'd before any other Method is undertaken: Indeed *Annell* and his Followers, after the Injection, applied a Compress and Bandage, to the good effects of which, rather than any of the other Processes, I am inclined to think their Success was owing.

WHEN the quantity of Matter returned by the *Puncta* increases notwithstanding the use of Compress, and the Tumour of the *Sacculus* grows larger, it then becomes necessary to perform the Operation, the Design of which is to cure the Ulcer, and make way for the Tears into the Nose.

THE general Notion that the Abscess of the Bag always occasions a Caries of the *Os Unguis*, perhaps may have led Surgeons into the Method of destroying both *Saccus* and Bone with a perforating Instrument, and afterwards more effectually with an actual Cautery, in order to remove the disorder'd Bone, and at the same time to make an artificial Canal into the Nose: But as there are many Instances of Cure by a mere Incision of the *Saccus Lachrymalis*, the rougher Method of Perforation ought not to be used, unless there is evidently a Caries in the adjacent Bone, or that after the Ulcer of the *Saccus* is heal'd the Tears cannot be made to pass through the Duct, tho' even in that case the Application of Fire is not only generally useless, but often proves hurtful, and defeats the very end it was intended to promote. The Design of the Cautery is to prevent the artificial Canal made by the Perforation from closing up; but the Operators who recommend it, confess that in Persons who have been cauterised, even at the best, the Tears trickle down ever after; whereas that Accident does not so often attend on those who are only perforated: The Reason of this Difference may perhaps be more clearly explained by a parallel Instance: If we divide a Vein quite

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through,

through, and cauterise its Extremities, 'tis well known that the Sloughs form'd by the Fire hardly ever separate from the living parts of the Vein, until they are totally closed up so as to prevent any Effusion of the circulating Blood; the consequence of which is, the breaking off the Communication of the divided Parts of the Vein; whereas if there was only an Opening made with a sharp Instrument, or even a piece of the Vein carried away by it, the divided parts would soon re-unite, and the Circulation be continued through them: for the same reason, by the use of the Cautery, the communication between the *Puncta Lachrymalia* and *Saccus* will often be intirely destroyed, and the Perforation into the Nose, though it remains open, will of consequence not answer the purpose for which it was intended.

IT may perhaps be said, that by introducing the Cautery through a *Canula*, the upper part of the *Saccus*, or Opening of the *Lachrymal* Channels, may be protected from these ill effects. But I believe it will plainly appear, by the rudeness of the Scar after the healing of the Wound, how powerfully Fire will work upon the neighbouring parts, notwithstanding this precaution.

FROM

FROM what has been said of the nature of this Disease, the use of Fire must be discarded in all the Stages of it, and even Perforation for the most part be practised only when the subjacent Bone is carious; but this Circumstance is very rare, and for my own part, since I have doubted its frequency, it has not been my fortune to meet with a single Instance of it; though I have had Fistula's of many years standing under my care, in some of which the *Pus* has found issue through the Bag and Skin, and formed an external Ulcer likewise. The reason why the inferior part of the *Saccus* is not so often corroded as the superior (in which case the Bone would necessarily be affected) is that here, as in every other part of the Body, Abscesses will break where they are least under confinement, as in those places they sooner give way to the preternatural Influx of the Juices, and in consequence becoming weaker, will sooner be destroyed. Since therefore neither the long continuance of the Disease, nor the great Discharge of Matter, are positive Symptoms of a Caries, we ought to be well satisfied of it by the feel of the Probe before we perforate; but if upon opening the Bag, or in the course of the Dressing, it appears the *Os unguis* is bare,

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we are not to wait for an Exfoliation, the Bone being so very thin, but to break through with a small Perforator.

MANY Writers mention the Success of having sometimes treated the *Fistula Lachrymalis* as a mere Abscess of the *Saccus*, though in general they recommend the use of Fire; but when the Abscess is so foul as not to cure by Incision, a piece of the Bag itself must be cut away; and thus *Celsus* treated the *Fistula Lachrymalis* (tho' he also used the Cautery) without perforating.

THE manner of operating in those cases where Perforation is not requir'd, is this: Supposing the Abscess not broke, choose a time when it is most turgid with Matter: and to this end you may shut the Patient's Eye the Day before, and lay little slips of Plaister upon one another across the Lids, from about the *Puncta Lachrymalia* to the internal Angle; which compressing their Channels and preventing the Flux of the Matter that way, will heap it up in the Bag, and indicate more certainly the place to be cut. If the Abscess is already open, the Orifice and Probe will inform you where to enlarge: Then placing the Patient in a Seat of convenient height for the management of your Hand,

Hand, with a small Incision Knife dilate from the upper part of the Bag down to the edge of the Orbit, without any regard to the Tendon of the Orbicularis Muscle, or fear of wounding the Blood-Vessels, tho' if you see the Vessels 'tis proper to shun them: The length of this Incision will be near four tenths of an Inch. It has been advis'd in opening the Bag to introduce a small Probe through one of the *Puncta* into its Cavity, to prevent wounding the posterior Part of it, but I think this excess of care may be more troublesome than useful, since in so large a Vessel a very small share of Dexterity is sufficient to avoid the mistake: In making this Incision care must be had not to cut too near the joining of the Eye-lids, because of the Deformity of the succeeding Scar: tho' the blear Eye or uneven Contraction of the Skin in that Part, after the Operation, is generally owing to the use of the Cautery, and not to the Wound of the Tendon of the Orbicularis Muscle; for this last is necessarily from its Situation always cut through, but without any Inconvenience, because of the firm Cicatrix afterwards that fixes it strongly to the Bone.

WHEN the Bag is open it is to be filled with dry Lint, which the next Day may be

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removed,

removed, and exchanged for a Doffil dipt in a soft digestive Medicine: This must be repeated every Day once or twice, according to the quantity of the Discharge: Now and then, when the Matter is not good, using the Precipitate Medicine, and from time to time a Sponge-Tent, to prevent the too sudden reunion of the upper part of the Abscess. When the Discharge begins to lessen, it will be proper to pass a small Probe, or Silver Wire through the Nasal Duct into the Nose, every time it is dress'd, in order to dilate it a little, and make way for the Tears and Matter which by their Drain will continue to keep it open. This Method must be followed 'till the Discharge is nearly over (which will be in a few Weeks) and then dressing superficially with dry Lint, or any drying Application, the Wound will seldom fail of healing. After the Cure, in order to prevent a Relapse, it will be proper, for a few Weeks, to wear the compressing Instrument represented in the Copper-plate.

WHEN the Bone is bare, and the Fistula requires Perforation, the Perforator is not to be carried down the *Ductus ad Nasum*, for fear of boring into the *Sinus Maxillaris*, but more internally towards the Nose, which will bleed freely

freely if properly wounded: The Wound afterwards should be dress'd with Dossils in the manner above described, and the Probe or Silver Wire be every Day pass'd through the *Ductus ad Nasum*, lest after the Cure of the Abscess it should still remain obstructed; and if upon trial the Duct should be so fill'd up as not to admit the Wire, it will be right to keep open the Perforation into the Nose with a small Tent 'till the Discharge is almost quite ceased.

I SHALL finish this Chapter with observing, that though a weeping Eye will sometimes remain after the Treatment of the *Fistula Lachrymalis*, yet the Inconvenience of it is so small, compar'd with a Discharge of Matter, that it would be happy if this was the worst Consequence of the Operation; but it sometimes happens that the Ulcer when heal'd, breaks out again, and sometimes too that it cannot be quite heal'd, by reason of the inferior part of the *Saccus* and Nasal Duct lying so deep below the edge of the Orbit, which makes the proper application of Dressings to the bottom of the Ulcer more difficult: 'Tis this situation of the *Saccus* that in a great measure prevents any good effects from burning and perforating, if the Perforation only
be

be dress'd, as is very much practis'd, since the Dressing will be full four tenths of an Inch above the lowest part of the Ulcer.

W I T H regard to the trickling of the Tears, though generally speaking it is prevented by the Method I have recommended, yet it does not appear at all wonderful it should so frequently be the consequence of the others, when we consider how much at best the *Saccus* contracts, after a great deal of it has been destroyed, and how possible it is for the Wound to fill up with Granulations of Flesh, which cannot fail to prove an obstacle to their Passage into the Nose.

P L A T E X I.

The E X P L A N A T I O N.

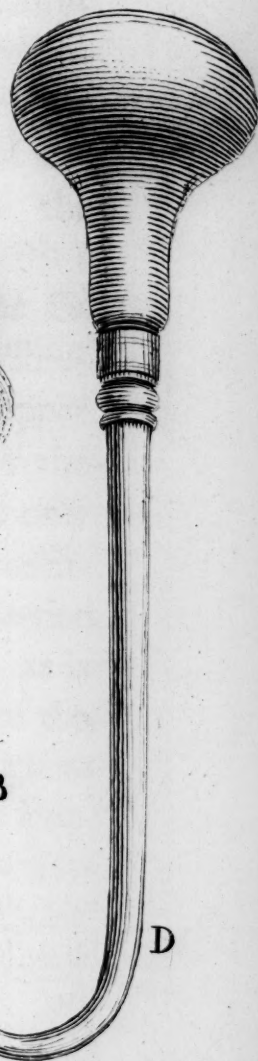
A. The Eye, with the Skin of the Eye-lids denuded, in order to shew the Orbicularis Muscle: The white Streak running from the inner Angle of the Eye towards the Nose is call'd the Tendon of the Orbicularis Muscle, though I think it rather a small Ligament. At a little distance from the internal Angle, on the edge of the Eye-lids may be observ'd two black Spots, which are the Orifices



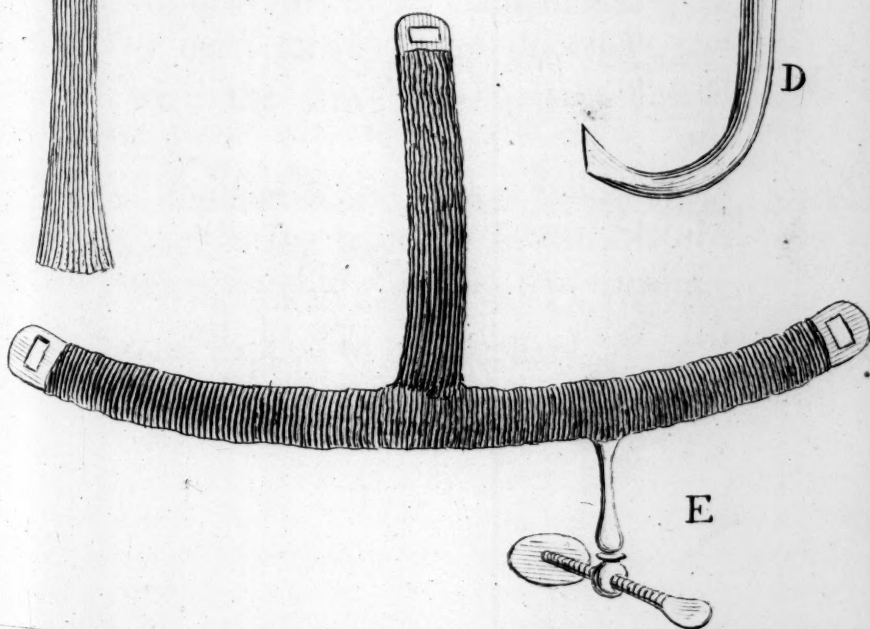
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Orifices of the Lachrymal Channels, and call'd the *Puncta Lachrymalia*.

B. The exact Dimension of the Lachrymal Channels and Bag; the prick'd Line represents the edge of the Orbit. I have here taken care to shew the oblique Direction of the Bag as it runs from the Nose towards the Orbit.

FROM comparing this Figure with the Situation of the *Puncta Lachrymalia* in the foregoing one, it will appear that only the upper part of the Bag lies under the Tendon of the Orbicularis Muscle, and consequently is the only part wounded, and burnt through in the common Operation, when the Perforator is carried horizontally from the Angle into the Nose, as is generally practis'd. And I believe the size of the Bag here represented, though not so large as when it is diseased, will at once shew the Propriety of opening it first by an Incision down to the Orbit, or even farther, and then treating the Fistula with the same Dressings as other fistulous Ulcers.

C. A small Incision-Knife, more handy than a larger for opening the Bag.

D. The Perforator to destroy the *Os Unguis*, if ever it should happen to be necessary.

E. An

E. An iron Instrument made thin and pliable, to set even on the Forehead, and for use cover'd with Velvet; the Holes at the three Extremities receive two pieces of Ribband, by which it is fasten'd on the Forehead: The Button at the end of the Screw is to be plac'd on the *Saccus Lachrymalis*, and the Screw to be twisted 'till the Button makes a considerable Pressure on the Bag: The Button should be cover'd with Velvet, and a little Compress of Plaister be laid on the Bag before it is applied, to prevent the Skin being gall'd by the Pressure. The little branch of Iron which receives the Screw, must be soft enough to admit of bending, otherwise it will be difficult to place the Button exactly on the Bag. This Instrument is for the left Eye only; it should be wore Night and Day in the beginning of a Fistula, and after a Fistula has been heal'd by Incision; but as the Success depends upon the exact Situation of the Button upon the Bag, it should be carefully look'd after.





C H A P. XXXI.

Of BRONCHOTOMY.

THE Operation of *Bronchotomy* is an Incision made into the *Aspera Arteria*, to make way for the Air into the Lungs, when Respiration is obstructed by any Tumour compressing the *Larynx*, or some other Disorder of the *Glottis* and *Aspera Arteria*, without any apparent Tumour. These are the Cases in which it is suppos'd to be useful, but I am inclin'd to think it hardly ever can be of service, but where the Complaint is attended with some Swelling, since I cannot find any Instance to my satisfaction of good done by this Operation in the other Species of *Angina*, nor has it appear'd upon the Examination of several who have died of it, that the Air was obstructed by any Stricture of the *Glottis*, or *Aspera Arteria*: If then the Passage remains open, and Respiration be disturb'd from other Causes, the making a new Orifice can be but of little advantage: I once perform'd it under this circumstance but it gave no sort of Relief.

UPON

UPON the whole then I imagine the practice of this Operation useful only in that Species of *Angina* where the Throat is exceedingly enlarg'd by the swelling of the Thyroid Gland, and parts adjacent, call'd *Bronchocele*, which by their weight may press upon the *Trachea* so as to make it in some degree narrower, and prevent the free course of the Air to and from the Lungs. But should any one judge it proper in the Instance I objected to, the Operation is so easy to perform, and so utterly void of any danger whatsoever notwithstanding the frightful Cautions laid down by Writers, that I would not altogether discourage the Trial 'till I have farther proof of its Insignificance.

THE manner of doing it is by making a longitudinal Incision through the Skin, three quarters of an Inch long, between the third and fourth Ring of the *Trachea*, if you have the choice of the Place; and when you cannot make it so high, the Rule will be to wound a little below the Tumour: It is always advis'd to pinch up the Skin for this Process, which however may be left to the Discretion of the Surgeon. When the Skin is cut through, you must make a small transverse Incision into the Windpipe, and immediately

intro-

introduce a crooked *Canula* near half an Inch long, of Silver or Lead, with a couple of little Rings at the top of it, through which a Ribband may be pass'd round the Neck to keep it fix'd in the Wound.

SOME have prescribed making an Incision through the Skin and *Trachea* at once, with a Lancet or Knife, as the more easy and expeditious Method; and I once saw it perform'd in that manner, but it proved very inconvenient, for the Windpipe in Respiration moving up and down, slip'd from the Orifice of the Skin, and made it very difficult to introduce the *Canula*, and afterwards to maintain it in its Situation: Wherefore I think it absolutely necessary to make the external Incision longitudinal, and even pretty large as I have directed above.

THE Caution laid down of raising the *Sternohyoidei* and *Sternothyroidei* Muscles, before cutting the Windpipe, is not to be regarded; and as to the Division of the recurrent Nerves and great Blood-Vessels, so much apprehended in this Operation, 'tis not in the least to be fear'd, since they are quite out of the reach of the Instrument, as any one skill'd in the

the Anatomy of those Parts must very well know.

T H E Method of Dressing will be easily understood, since after the Patient can breathe by the natural Passage, if you withdraw the hollow Tent, the Wound will become a simple one, and notwithstanding its Penetration through a Cartilage into a large Cavity, require a superficial Application only.



C H A P. XXXII.

Of the Extirpation of the TONSILS.

TH E S E Glands sometimes grow so large and schirrous as to become incurable, and even to threaten Suffocation if not extirpated: The manner of doing this Operation formerly, was by cutting them off; but the almost constant Consequence of this Wound was a violent Bleeding, and sometimes too a mortal one; on which account it is rejected in favour of the Ligature, which is not only void of Danger, but also seldom fails of Cure.

IF the basis of the Tonsil is smaller than the upper part, you may pass the Ligature by tying it to the end of a Probe, bent into the form of an Arch, which being carried beyond the Gland, and round it, is to be brought back again; this done, you may easily tie it by the means of an Instrument of Mr. *Chefelden's* Contrivance, which holds one end of the String on the side of the Tonsil next the Throat, while you make the Knot by pulling the other with the right Hand quite out of the Mouth, as will be easily understood by the Draught in the Copper-plate. Should it happen that the Tonsils are Conical, so that the Ligature will necessarily slip over its Extremity when we attempt to tie, in this case he has recommended an Instrument like a crooked Needle, set in a Handle, with an Eye near the point, threaded with a Ligature, which is to be thrust through the bottom of the Gland, and being laid hold of with a Hook, the Instrument is to be withdrawn; then pulling the double Ligature forwards, it must be divided, and one part be ty'd above, and the other below the Tumour: The Knots are to be always double, and the Ligature to be cut off pretty near

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them: If after four or five Days they slip, or seem to have mortify'd the Tonfil only in part, you must repeat the whole Operation, though I think all I have done have succeeded the first time.

THIS kind of Extirpation is more easily practis'd in large bleeding Piles, that are esteemed incurable, and if the success of it was better known, the Operation would be much more frequent. I have by this Method cured several People that have discharged Blood every Stool for many Years, and some that have been almost quite destroy'd by the repeated Losses of it. When the Piles are withinside of the Intestine, you must place your Patient over a Fomentation in a Close-stool, and have a crooked Needle with a double Ligature ready to pass through them, when by straining they are push'd out of the *Anus* (for sometimes the Intestine will return suddenly) and tie above and below as in the Instance of the Tonfil. Sometimes the Piles are of that shape as to admit a single Ligature to be ty'd round them, without the help of a Needle, which is less painful: If there are several, you must only tie one or two at a time, for the Pain of the Ligature is excessive, and would

would be intolerable if many were ty'd at once: However every five or six Days the Operation may be repeated 'till all are extirpated, and the Parts must be kept supple by some emollient Ointments.

I HAVE seen the Cure of these attempted by cutting off, but the Patient escap'd very narrowly from dying of the Effusion of Blood.

THE *Uvula* is subject to so great a degree of Relaxation sometimes, that it almost chokes the Patient; the readiest Cure is cutting of all but half an Inch of it, which may be done at one snip with a pair of Scissars, laying hold of it with a Forceps, lest it should slip away. I once cut off a *Uvula* that lay roll'd upon the Tongue about two Inches; the Patient recover'd immediately, and never felt any Inconvenience afterwards.



P L A T E XII.

The E X P L A N A T I O N.

A. T H E bent Probe fix'd in a Handle, with the Ligature made of the same Thread as the Ligatures for tying the Blood-Vessels.

B. T H E Iron Instrument for tying the Tonfils.

I H A V E here made a Knot upon a Pin, which is to be suppos'd in the situation of one of the Tonfils, and may easily be imagin'd to have been tied by pushing the String beyond it, when held firm by one Hand against the Instrument, and pull'd by the other on the outside of the Mouth.

T H I S Instrument is also of great service in extirpating by Ligature, a Species of Schirrus that sometimes grows in the Neck of the *Uterus*.

C. T H E Needle with the Eye towards the point, for passing the Ligature through the Tonfil, when the Basis is larger than the Extremity.

D. A *Canula* made of Silver or Lead, to be us'd in the *Empyema*.

E. A *Canula* to be us'd in *Bronchotomy*.

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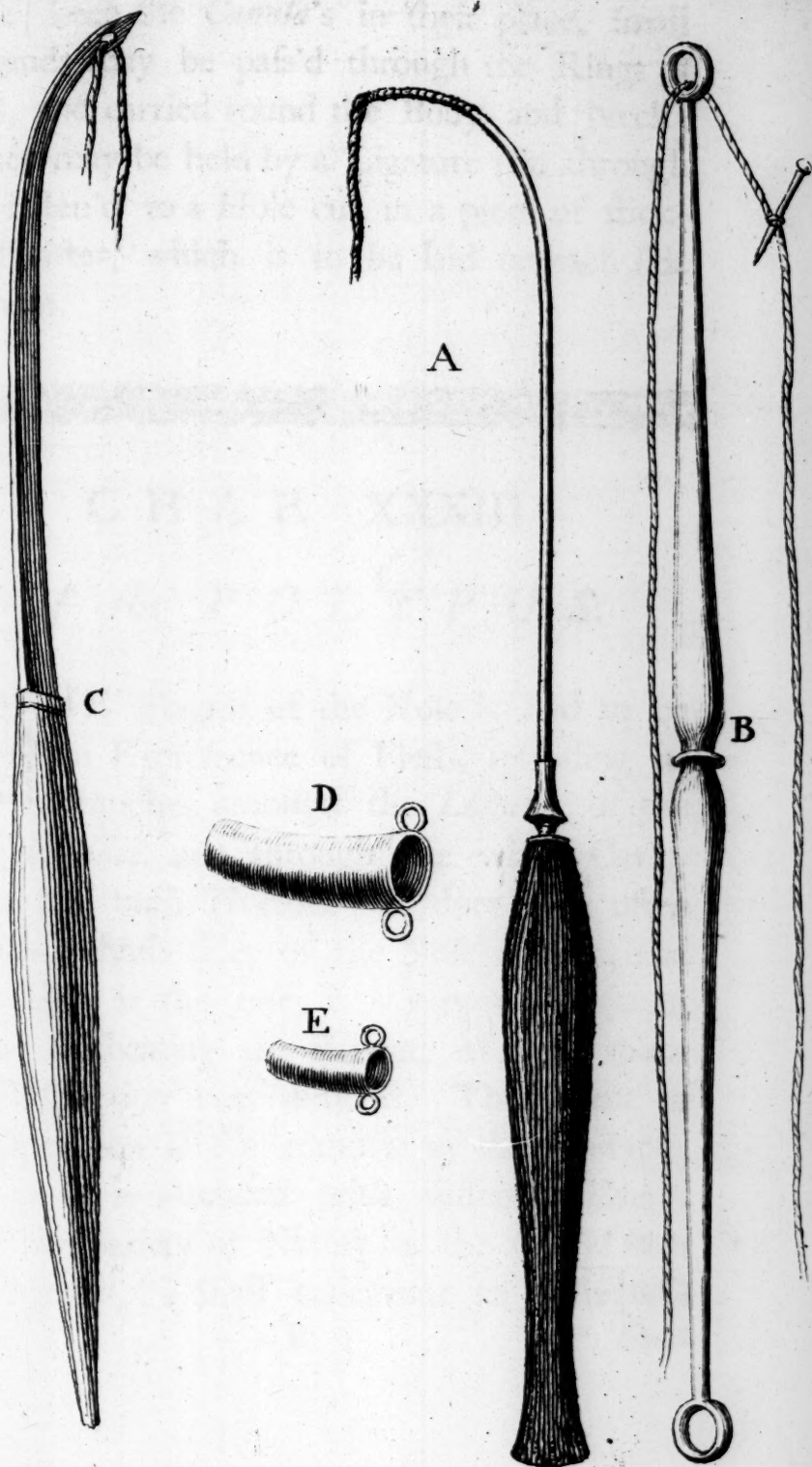


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their Species, so as to lead us into some Judgment of the greater or less probability of Success.

THEY all arise from the Membrane spread upon the *Laminæ Spongiosæ*, pretty nearly in the same manner as the *Hydatids* of the *Abdomen*, in one kind of Dropsy, do from the surface of the Liver, or as Ganglions from the Tendons, borrowing their Coats from a Production of its Fibres and Vessels: If they appear soft, and of the Colour of the *Serum* of the Blood, in all likelihood they are form'd of such a sort of Water contain'd in Cyfts, which upon breaking the Membrane leaves so little hold for the Instrument, that but a small part of it can be extracted afterwards. This *Polypus* is to be left to harden before the Operation be undertaken, which in process of time it generally will do. In the next degree of Consistence they retain pretty near the same Colour, and are often partly watry and partly of a viscid Texture, which though not tenacious enough to admit of drawing them out by the Roots, may at several attempts be taken away by bits. The next degree of Consistence, is that which is neither so soft as to be squeez'd to pieces, nor so hard and brittle

as to crumble, or adhere to the Membrane with that force as not to admit of Separation: This, to be sure, is the most favourable one. The last is hard and schirrous, adhering so tight as to tear rather than separate in the Extraction, and sometimes even tends to degenerate into a Cancer: This *Polypus* is very difficult of Cure.

THE *Polypus* sometimes dilates to that degree, as not only to extend beyond the *Os Palati*, and hang over the *Oesophagus* and *Trachea*, but also spreading into the *Sinus maxillaris*, so exactly fills up every Interstice of the Nose, as to obstruct the lower Orifice of the *Ductus ad Nasum*, and prevent the descent of the Tears, which necessarily must return through the *Puncta Lachrymalia*. When the *Polypus* appears in the Throat, it is always adviseable to extract it that way, it being found by experience more ready to loosen when pull'd in that Direction than by the Nose. To this end it would be right, before undertaking the Operation, to let your Patient lie supine two or three Hours, which will bring it still farther down, for the Body of the *Polypus* does not universally adhere, and will by its weight stretch out the Fibres by which it

is connected to the Nose; nay, there are Instances where by a little Effort, such as Hawking, they have dropt quite off.

THE Method of Extracting is by a pair of Forceps, with a Slit at their Extremities for the better hold, which must be introduc'd into the Nostril about an Inch and a half, to make more sure of it towards the Roots; then twisting them a little from one side to the other, you must continue in that Action while you pull very gradually the Body of the *Polypus*. If it breaks, you must repeat the Extraction as long as any remains, unless it is attended with a violent Hæmorrhage, which is an Accident that sometimes follows upon the Operation, and seldom fails when the Excrescence is schirrous: However, the Surgeon is not to be alarmed at the appearance of an immoderate Effusion the Moment after the Separation, for generally speaking the Vessels collapse very soon again; but if they do not, dry Lint, or Lint dipt in some Styptick, will readily stop it.

AFTER the Extirpation it has been usual, in order to prevent a Relapse, to dress with Escharotick Powders, and even to burn with the actual Caутery; but neither the one or
the

the other can be of great service in this Case, and both are painful and dangerous. If ever the use of corrosive Medicines is adviseable, it should be for destroying the remainder of a *Polypus*, that cannot all be taken away, and then the Escharoticks may, in my Opinion, be better convey'd to the part by a long Tent, than a Seton pass'd through the Nose and Mouth, which is difficult to do without hurting the Patient, and very nasty to bear, though this is the Method at present practis'd and recommended by some eminent Surgeons.



C H A P. XXXIV.

Of the H A R E L I P.

THIS Disease is a Fissure in the Upper Lip, with want of Substance, and is a natural Defect, the Patient being always born with it, at least that Species of Hare Lip which requires the Operation I am going to describe. The Cure is to be perform'd by the twisted Suture, the Explanation of which I have

have reserved for this Chapter. There are many Lips where the loss of Substance is so great, that the Edges of the Fissure cannot be brought together, or at best where they can but just touch, in which case it need not be advis'd to forbear the attempt: It is likewise forbid in young Children, and with reason, if they suck; but otherwise it may be undertaken with great Safety, and even with more probability of Success, than in others that are older.

IT is not uncommon for the Roof of the Mouth to be fissur'd likewise, but this is no Objection to the Operation, if the Skin of the Lip is loose enough to admit of Re-union.

THE manner of doing it is this. You first with a Knife separate the Lip from the Upper Jaw, by dividing the *Frænulum* between it and the Gums; then with a thin pair of straight Scissars cut off the callous Edges of the Fissure the whole length of it, observing the Rule of making the new Wound in straight Lines, because the sides of it can never be made to correspond without this Caution. For instance, if the Hare Lip had this shape, the Incision of the Edges must be continued in straight Lines



'till

'till they meet in the manner here represented. The two Lips of the Wound being brought exactly together, you pass a couple of Pins one pretty near the top, and the other as near the bottom, through the middle of both Edges of it, and secure them in that situation by twisting a piece of waxed Thread cross and round the Pins seven or eight times; you must then cut off the Points, and lay a small Bolster underneath them to prevent their scratching: But when the lower part only of the Hare Lip can be brought into Contact, it will not be proper to use more than one Pin.



THE Pins I employ are made three fourths of their lengths of Silver, and the other part towards the point of Steel; the silver Pin is not quite so offensive to a Wound as a brass or steel one; but a steel Point is necessary for their easier penetration, which indeed makes them pass so readily, that there is no need of any Instrument to assist in pushing them thro'. The Practice of bolstering the Cheeks forward does little or no service to the Wound, and is very uneasy to the Patient, wherefore I would not advise the use of it. The manner of dressing will be to remove the Applications which

which are quite superficial, as often only as is necessary for cleanliness. The Method I would recommend is to desist the three first Days, and afterwards to do it every Day, or every other Day: I do not think it at all requisite to dress between the Jaw and Lip where the *Frænulum* was wounded, there being no danger that an inconvenient Adhesion should ensue. In about ten or eleven Days the Parts are usually united, when you must gently cut the Threads, and draw out the Pins, applying upon the Orifices a piece of Plaster and dry Lint.

THE twisted Suture is of great service in Fistula's of the *Urethra* remaining after the Operation for the Stone, in which case the callous Edges may be cut off, and the Lips of the Wound be held together by this Method.





C H A P. XXXV.

Of the W R Y N E C K.

THE Operation of cutting the Wry Neck is very uncommon, and is never to be practised but when the Disorder is owing to a Contraction of the *Mastoideus* Muscle only, as it can answer no purpose to set that Muscle free, by dividing it, which is all that is to be done, if the others of the Neck are in the same state, and more especially if it has been of long standing from Infancy, because the growth of the *Vertebrae* will have been determined in that Direction, and make it impossible to set the Head upright.

WHEN the Case is fair, the Operation is this. Having laid your Patient on a Table, make a transverse Incision through the Skin and Fat, something broader than the Muscle, and about one third of its length from the *Clavicle*; then passing the probed Razor with care underneath the Muscle, draw it out and cut the Muscle. The great Vessels of the Neck lie

lie underneath, but I think, when we are aware of their situation, there is no great danger of wounding them. After the Incision is made, the Wound is to be cramm'd with dry Lint, and always dress'd so as to prevent the Extremities of the Muscle from re-uniting; to which end they are to be separated from each other as much as possible, by the assistance of a supporting Bandage for the Head, during the whole time of the Cure, which will generally be about a Month.

P L A T E XIII.

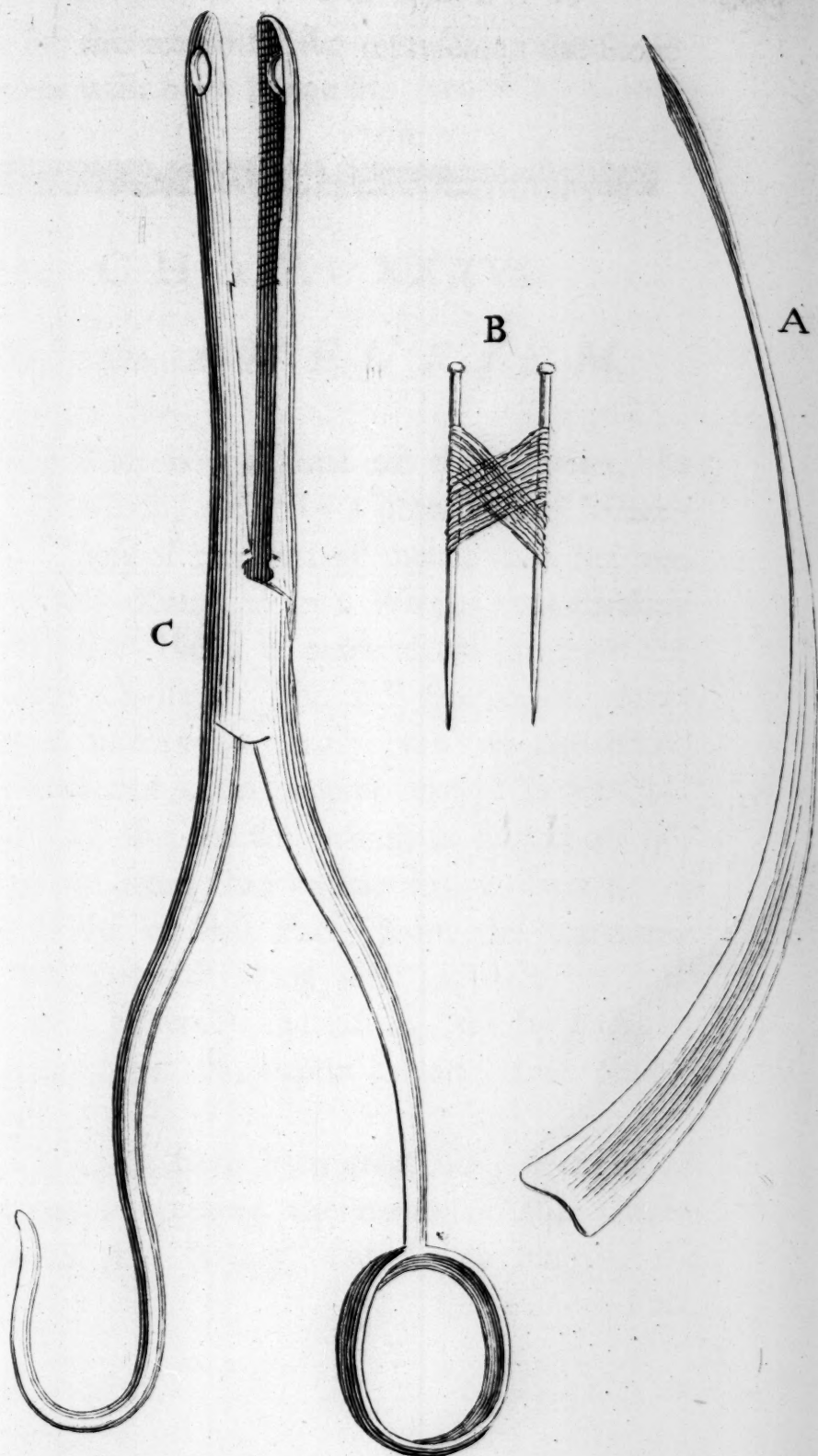
The E X P L A N A T I O N.

A. THE Instrument call'd the Probe-Razor, to cut the *Mastoideus* Muscle in the wry Neck, and is sharp only about half its length, at that end where the Blade is broad.

B. The two Pins with the twisted Suture, us'd in the Hare Lip.

C. The *Polypus* Forceps, with one of the Rings open for the Reception of the Thumb, which would be cramp'd in pulling the Forceps with much force, if it was receiv'd in the same sort of Ring as in the other Handle.

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'Tis for this reason I have represented the Stone Forceps with open Rings.



C H A P. XXXVI.

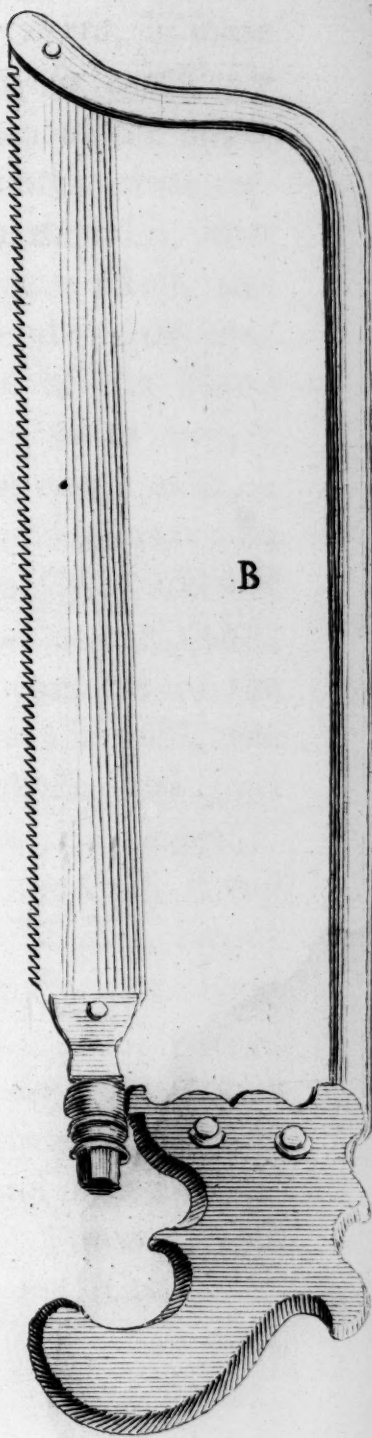
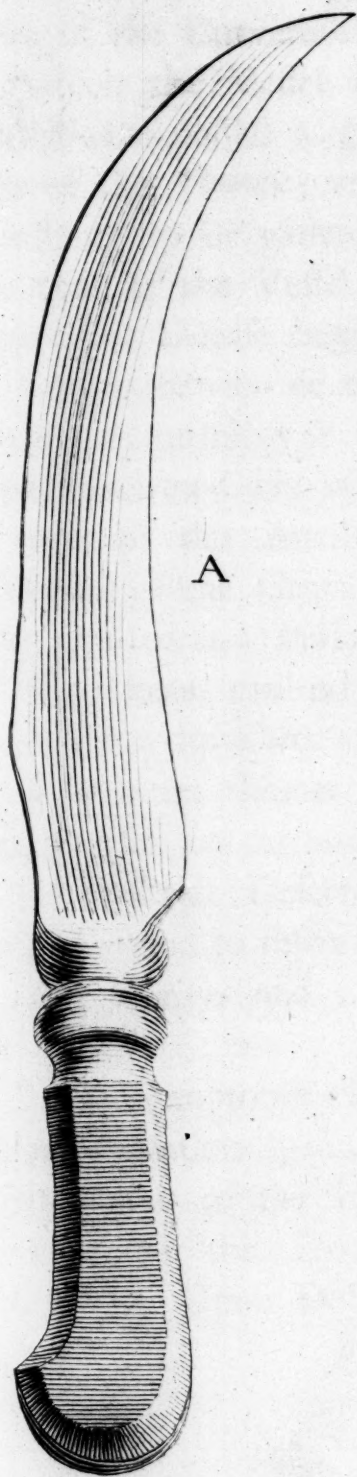
Of the *A N E U R I S M*.

THIS is a Disease of the Arteries, in which, either by a preternatural Weakness of any part of them, they become excessively dilated, or by a Wound through their Coats, the Blood is extravasated amongst the adjacent Cavities. The first Species of *Aneurism* is incident to every part of the Body, but does not often happen, except to the Curvature of the *Aorta*, which is subject to this Disorder from the extraordinary Impulse of the Blood on that Part; from the Curvature it runs upwards along the Carotids or Subclavians, generally increasing, 'till by its great Distension it is ruptur'd, and the Patient dies.

THERE have been great Disputes amongst Writers concerning the nature of this Dilatation of the Artery, some even denying the Fact,

Fact, and supposing it always a Rupture; some, that all the Coats are distended; others, only the external one; and again others, whose Doctrine has been the best receiv'd, that the internal Coat was ruptur'd, and the external dilated: These last have supported their Hypothesis with Arguments drawn from the Anatomy of the internal Coat, which is ligamentous, and incapable of much Distension; so that if an Artery be inflated with a sufficient force, the Air will burst that Coat, and expand the external one, that is, make an artificial *Aneurism*, in the same manner as Blood is supposed to make a natural one; But this Argument is of little force when we consider, that there are many parts of an animal Body which Violence cannot stretch considerably, but which, by the gradual Influx of the Juices, become susceptible of monstrous Distension, as is the case of the *Uterus*, and upon Observation is evidently the case likewise of all the Coats of the Artery, as I have had an opportunity to examine in several *Aneurisms* in the Collection of Dr. *Douglas*, which he has been so kind to lend me for that purpose.

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THERE are several Histories given of *Aneurisms* of the Curvature of the *Aorta*, in some of which the Vessel has been so excessively dilated as to possess a great space of the upper part of the *Thorax*; and the most curious circumstance to be gather'd from them is, that the Spot of the Vessel which is weakest, and where the Disease begins, generally gives way in such a manner to the force of the Blood continually pushing it outwards, as to form a large Pouch or Cyst, with Coats nearly as thick as those of the Artery itself: However the thickness of the Coats of these Cysts will last but to a certain Period, for when the Vessels of the Coats can no longer conform to the Extension, the Circulation grows languid, the Cyst becomes thinner at its Apex, and soon after bursts.

FROM this Description of the Cyst, it will be understood to resemble the Bladder, having a large Cavity, and a narrow Neck or Opening.

THE Symptoms of this *Aneurism* are a strong Pulsation against the *Sternum* and Ribs every *Systole* of the Heart, and when it extends above the *Sternum*, a Tumour with Pulsation: Upon Dissection, the Ribs, *Sternum*,
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num, and *Clavicle*, are sometimes found carious, from the Obstruction of the Vessels of the *Periosteum*, which are press'd by the Tumour. What are the Causes of a particular Weakness in any of the Coats of the Artery, I cannot take upon me to determine: but 'tis worth observing, that the dilated *Aorta* every where in the neighbourhood of the Cyst is generally ossify'd; and indeed Ossifications, or Indurations of the Artery, appear so constantly in the beginnings of *Aneurisms*, that 'tis not easy to judge whether they are the Cause or the Effect of them.

WHAT I have spoke of hitherto has been only the *Aneurism* of the *Thorax* from an internal Disorder; *Aneurisms* of the Extremities are for the most part owing to Wounds, though when they happen of themselves they differ very little from the Description I have given of that in the *Thorax*: The further Symptoms of them are (besides Pulsation) the Tumour's being without Discolouration in the Skin, its subsiding when press'd by the Hand, and immediately returning when the Hand is taken away; though if it be upon the point of bursting, the Skin will grow inflamed, and the coagulated Blood in the Cyst will sometimes

times make the Pulsation much less perceptible.

THIS Species of *Aneurism* may sometimes be supported a great number of Years, if we resist its Dilatation by proper Bandage; but there is danger of its bursting otherwise, and if it be pretty large, of rotting the adjacent Bones.

A SOUND Artery wounded through part of its external Coat, would in all probability produce nearly the same Appearances as where the whole Coat is weakened from an Internal Indisposition, and this most likely is the case after bleeding in the Arm, when it has not been immediately perceiv'd that the Artery was prick'd, and the Tumour has begun to form some Days after the Puncture; tho' the common Appearance of an *Aneurism* from the Wound of a Lancet, is a Discharge of Blood first through the Orifice of the Skin, and, upon being stopt from bleeding outwardly, an Insinuation of it among all the Muscles as far as it can spread, in the Shoulder and Arm; here the Arm grows livid from the *Ecchymosis*, and the Blood coagulating to the consistence of Flesh, prevents any sensible Pulsation, and when a Cyst rises near the Ori-

fice of the Artery, 'tis for the most part form'd by the *Aponeurosis* that runs over the Vessel, which admitting of some extravasated Blood underneath it, becomes excessively thicken'd and expanded: This Membrane I judge must make the Cyst, otherwise we could not upon opening the Tumour in the Operation discover so readily the Puncture, or if the Coats of the Artery made it, we could not separate it distinctly from the Vessel, which would be always dilated above and below the Cyst, as we see in other *Aneurisms*, but in this it rarely occurs.

T H E R E are some few Instances of small *Aneurisms* and Punctures of the Artery from bleeding, doing well by Bandage, but they almost all require the Operation at last, which is to be perform'd nearly in the same manner in every part; and supposing it in the Bend of the Arm, is to be done after the following Method.

H A V I N G applied the Tournequet near the Shoulder, and laid the Arm in a convenient Situation, make an Incision on the Inside of the *Biceps* Muscle, above and below the Elbow a considerable length, which being in the course of the Artery, will discover it as soon

as you have remov'd the coagulated Blood, which must be all pull'd away with the Fingers, the Wound being dilated sufficiently for that purpose : If the Orifice does not readily appear, let the Tournequet be loosened, and the Effusion of Blood will direct you to it; then carefully carrying a crooked Needle with a Ligature under it, tie the Vessel just above the Orifice, and passing the Needle again, make a second Ligature below it to prevent the return of the Blood, and leave the intermediate piece of the Vessel to slough away without dividing it. To avoid wounding or tying the Nerve in making the Ligature, the Artery may be cleared away from it first, and held up with a Hook; but I think, if we are aware of the Situation of the Nerve, there is no great danger of hurting it. After the Operation the Arm must be laid easy, on a Pillow in Bed, and the Wound be treated in the common Method, keeping it in that Posture a Fortnight or three Weeks, especially if it should swell much, and not digest kindly.

IN doing this Operation, it will be proper to have the amputating Instruments ready, lest it should be impracticable to tie the Artery; and even after having tied it, the Arm

must be carefully watched, that in case of a Mortification it may be taken off, which though from Experience we learn is very seldom the Consequence, should to all appearance be the perpetual one; for these *Aneurisms* following always upon bleeding the *Basilick* Vein must necessarily be *Aneurisms* of the *Humeral* Artery an Inch at least above its Division, which being obstructed by the Ligature, one would think must necessarily bring on a Mortification; but we see the contrary, though for some time after the Operation we can hardly distinguish the least degree of Pulse, and ever after they continue languid. If the *Humeral* Artery happens to divide above the Elbow, which is not uncommon, the Prospect of Cure is better, and the Pulse will be stronger after the Operation.





C H A P. XXXVII.

Of AMPUTATION.

A SPREADING Mortification has been always look'd upon as so principal a Cause for Amputation, that it is a fashion with all Writers to treat of the nature of a Gangrene previous to the Description of this Operation; and I think they have all agreed, that whatever the Species of it be, if the Remedies they prescribe do not prevent its Progress, the Limb must be amputated: However, this Operation is spoken of as frequently unsuccessful, and in length of time its want of Success has been so unquestionably confirm'd by repeated Experiments, that some of the most eminent Practitioners here in *England*, make that very Distemper an Exception to the Operation, which so few Years since was the great Inducement; and the Maxim now is, never to extirpate 'till the Mortification is absolutely stopp'd, and even advanc'd in its Separation.

G A N G R E N E S may be produced two ways, either by Indisposition of Body, or by Accident in a healthful State; for as the Life of a Part depends upon the Circulation of its Fluids, whatever shall make the Circulation cease, will inevitably occasion a Gangrene: Thus a mere Compress preventing the Course of the Blood, as effectually causes a Mortification as any Indisposition in the Fluids or Vessels.

I T frequently happens in old Age, that the Arteries of the lower Extremities ossify, which destroying their Elasticity, must in consequence produce a Gangrene in the Toes first, and afterwards in the Limb nearly as high as where the Ossification terminates; so that in Mortifications arising from this cause, we at once see why Amputation, during their Increase, is of so little Service, unless perform'd above the Ossification, but we have no way to judge where the Ossification ends, but by the Inference we make from the Gangrene's stopping: Hence we may learn the Propriety of our modern Practice in this case.

I F by any Accident the Limb has been injur'd to that violent degree as to begin to mortify, it will be no more fit to operate here 'till it stops, than in the other instance,

stance, because all Parts that are mortified have had the Disposition to become so, before the Effect is produc'd, and cutting off a Limb half an Inch above the absolute dead Skin, is generally leaving a part behind with the Seeds of a Mortification in it; so unless we can be sure the Vessels are not affected in the place of Amputation, which will be hard to know but from the Consequence, the Operation will be useless.

SOMETIMES the Fluids of the Body are so vitiated as to lose their proper nutritious Qualities, and the Limb becomes gangrened, not from any Alteration in its Vessels, but chiefly from its Situation, which being at a great distance from the Heart, will be more prone to feel the ill effects of a bad Blood than any other part, as the Circulation is more languid in the Extremities. When therefore a Gangrene arising from this Cause is running on, Amputation above it will for the most part be useless, since it is only removing one of the Effects of the bad Juices, and leaving them in the same state to produce the like mischief in other parts: Thus we see after Amputations on this account, the Gangrene sometimes falls on the Bowels, or the other
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Extremities; from which Observation I think we may conclude it not safe to amputate, 'till the Fluids are alter'd, and this Alteration will presently discover itself by the stopping of the Mortification.

I HAVE laid it down as a Rule, that the Mortification should not only be stopp'd, but advanc'd in its Separation; the reason of which is, that though the Blood is so much alter'd for the better as to occasion a stoppage of the Gangrene, yet at this point of Alteration 'tis still in a bad State, and should be left to mend, with the utmost Tranquillity of Body, and Assistance of Cordial Medicines, 'till such time as Granulations of Flesh upon the living part of the Extremity shew the balsamick Disposition of the Blood: In the mean while, to take off the Stench of the Gangrene, it may be wrapt up in spirituous or odoriferous Applications. I have seen some Limbs taken off immediately upon the Mortification's ceasing, when afterwards the Patients have sunk from frequent Effusions of Blood not discharged by the great Vessels, but the whole Stump: These Hæmorrhages I conceive were owing to the thinness of the Blood, which hardly gave a reddish Tincture to the Clothes and Bandages; on the other hand,

hand, upon waiting a considerable time after the ceasing of the Mortification, I have taken off some myself with as good Success as for any other Disorder.

GUNSHOT Wounds, compound Fractures, and all sudden Accidents requiring Amputation, are attended with the best Success if immediately perform'd. Disorders of the Joints, Ulcers of long standing, and all scrophulous Tumours, do sometime return on other Parts after the Operation. When a Leg is to be amputated, the manner of doing it is this.

LAY your Patient on a Table two Foot six Inches high, which is much better than a low Seat, both for securing him steady, and giving yourself the advantage of operating without stooping, which is not only painful but inconvenient in the other Situation. While one of the Assistants holds the Leg, you must roll a slip of fine Rag half an Inch broad, three or four times round it, about four or five Inches below the inferior Extremity of the *Patella*: This being pinn'd on, is to serve as a Guide for the Knife, which without it perhaps would not be directed so dexterously: The manner of rolling has always been perpendicular to the length of the Leg, but
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having sometimes observed that tho' the Amputation at first be even, yet afterwards the *Gastrocnemius* Muscle contracting, draws back the inferior part of the Stump more strongly than the other Muscles can do the rest of it; I have lately, in order to preserve the regularity of the Cicatrix, allow'd for this Excess of Contraction, and made the circular Incision in such a manner that the part of the Wound which is on the Calf of the Leg, is a little farther from the Ham than that on the Shin is from the middle of the *Patella*.

IN the mean time one of your Assistants must carry a strong Ligature round the Thigh about three or four Inches above the *Patella*, which passing through a couple of Slits in a square piece of Leather, he must twist with a Tournequet 'till the Artery is sufficiently compress'd, to prevent any great Effusion of Blood; and to do it more effectually he may lay a Bolster of Tow or Linnen under the Ligature, upon that part where the Artery creeps.

THE Course of the Blood being stopp'd, you must begin your Incision just below the linnen Roller, on the under part of the Limb, bringing your Knife towards you, which at

one

one sweep may cut more than the Semicircle, then beginning your second Wound on the upper part, it must be continued from the one Extremity to the other of the first Wound, making them but one Line. These Incisions must be made quite through the *Membrana Adiposa*, as far as the Muscles; then taking off the linen Roller, and an Assistant drawing back the Skin as far as it will go, you make your Wound from the Edges of it when drawn back through the Flesh to the Bone, in the same manner as you did through the Skin. Before you saw the Bones, you must cut the Ligament between them, with the point of your Knife, and the Assistant who holds the Leg while it is sawing, must observe not to lift it upwards, which would clog the Instrument.

IN Amputating below the Knee, it is of Advantage to stand on the inside of the Leg, because the *Tibia* and *Fibula* lie in a position to be saw'd at the same time, if the Instrument be apply'd externally: Whereas if we lay it on the inside of the Leg, the *Tibia* will be divided first, and the *Fibula* afterwards, which not only lengthens the Operation, but is also apt to splinter the

the *Fibula* when it is almost saw'd through, unless the Assistant be very careful in supporting it.

WHEN the Leg is taken off, the next regard is to be had to the stopping the Blood, which must be effectually done before the Patient is put to Bed, or there will be great danger of Bleeding again, when the Fever is excited, and the Vessels of the Stump dilated, both which happen a very little while after the Operation. There is no Method for this Purpose so secure, as tying the Extremities of the Vessels with a Ligature, which with a crooked Needle pass'd twice through the Flesh, almost round them, will, when the Knot is made, necessarily inclose them in the Stricture; and to discover the Orifice of a Vessel your Assistant must every time loosen the Tournequet: This is a much better way than using the Artery Forceps, where the Vessels are apt to slip away out of the Ligature; and as to styptick Applications, their want of Safety is so well known now, that the use of them, in Hæmorrhages from large Vessels, is almost universally rejected.

IT sometimes happens in a large Stump, that ten or more Vessels require tying, which done, you must apply loose dry Lint to the Wound; or in case the small Vessels bleed plentifully, you may throw a handful of Flower amongst the Lint, which will contribute to the more effectual stopping up their Orifices: Before you lay on the Pledgit, you must bind the Stump, and begin to roll from the lower part of the Thigh down to the Extremity of the Stump. The use of this Roller is to keep the Skin forwards, which, notwithstanding the Steps already taken to prevent its falling back, would in some measure do so, unless sustained in this manner. The Dressings may be secur'd by the cross Cloth and gentle Bandage, and the Method of treating the Wound may be learnt from what has been said with respect to recent incis'd Wounds.

BEFORE the Invention of making the double Incision I have just now described, the Cure of a Stump was always a Work of length of Time; for by cutting down to the Bone at once, and sawing it directly, the consequence was, that the Skin and Flesh withdrew themselves, and left it protruding out of the Wound two or three Inches in some Cases, so that it rarely

rarely happen'd that an Exfoliation did not follow, which besides being tedious, also frequently reduced the Wound to an habitual Ulcer, and at best left a pointed Stump with a Cicatrix ready to fly open upon the least Accident; all which Inconveniencies are avoided by this new Method, and I know not of any Objection to it, unless that the pain of making the Wound is suppos'd to be twice as much as in the other, because of the double Incision; but when we consider that we only cut the Skin once, and the Flesh once, though not in the same Moment, I fancy upon reflexion, the difference of Pain will be thought inconsiderable.

I N Amputating the Thigh, the first Incision is to be made a little more than two Inches above the middle of the *Patella*; after the Operation a Roller should be carried round the Body and down the Thigh to support the Skin and Flesh; this is also the most proper Bandage, as Abscesses will sometimes form in the upper part of the Thigh, which cannot discharge themselves so conveniently with any other, it being almost impracticable to roll above the Abscess, unless we begin from the Body.

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THE Amputation of the Arm and Cubit differs so little from the foregoing Operations, that it will be but a Repetition to describe it. However, it must be laid down as a Rule, to preserve as much of the Limb as possible, and in all Amputations of the upper Limbs, to place your Patient in a Chair.

THERE are in Armies a great many instances of Gun-shot Wounds of the Arm near the *Scapula*, which require Amputation at the Shoulder; but the Apprehension of losing their Patients on the spot by the Hæmorrhage has deterred Surgeons from undertaking it. I have heard of its having been done once, but though it had never been perform'd, we might learn it is practical from the case of a poor Miller whose Arm and *Scapula* were both torn from his Body by a Rope, which was accidentally twisted round his Wrist, and suddenly drawn up by the Mill. Almost every one in *London* knows the Story, and that he recover'd in a few Weeks: It is very remarkable in this Accident, that after Fainting, the Hæmorrhage stopp'd of itself, and never bled afresh, though nothing but Lint and Turpentine were laid on the great Vessels. In case therefore of a Wound or Fracture near the Joint, or incurable Fistula's

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in the Joint, not attended with much Caries, I think the Operation may be perform'd safely in this manner.

THE Patient's Arm being held horizontal, make an Incision through the *Membrana Adiposa*, from the upper part of the Shoulder across the Pectoral Muscle, down to the Arm-pit, then turning the Knife with its Edge upwards, divide that Muscle and part of the *Deltoid*, all which may be done without danger of wounding the great Vessels, which will become expos'd by these Openings; if they be not, cut still more of the *Deltoid* Muscle, and carry the Arm backward: Then with a strong Ligature, having tied the Artery and Vein, pursue the circular Incision through the Joint, and carefully divide the Vessels at a considerable distance below the Ligature; the other small Vessels are to be stopp'd as in other Cases.

IN doing this Operation regard should be had to the saving as much Skin as possible, and to the Situation of the *Processus Acromion*, which projecting considerably beyond the Joint, an unwary Operator would be apt to cut upon.

THE Amputation of the Fingers and Toes is better perform'd in their Articulation than by any of the other Methods: For this Purpose

pose a straight Knife must be us'd, and the Incision of the Skin be made not exactly upon the Joint, but a little towards the Extremity of the Fingers, that more of it may be preserv'd for the easier healing afterwards; it will also facilitate the Separation in the Joint, when you cut the Finger from the *Metacarpal* Bone, to make two small longitudinal Incisions on each side of it first. In these Amputations there is generally a Vessel or two that require tying, and which often prove troublesome when the Ligature is omitted.

IT may happen that the Bones of the Toes, and part only of the *Metatarsal* Bones are carious, in which case the Leg need not be cut off, but only so much of the Foot as is disorder'd; a small Spring-Saw is better to divide with here than a large one: When this Operation is perform'd the Heel and Remainder of the Foot will be of great service, and the Wound heal up safely, as I have found by Experience.



The E X P L A N A T I O N.

A. T H E Figure of the Amputating Knife. The Length of the Blade and Handle should be about thirteen Inches.

B. T H E Figure of the Saw us'd in Amputating the Limbs. The Length of the Handle and Saw should be about seventeen Inches.



C H A P. XXXVIII.

Of I N O C U L A T I O N.

IT is usual to prepare the Patient for this Operation by Diet and Evacuations, which, according to the habit of Body, are to be more or less severe. Some Physicians recommend frequent Bleedings and Purgings, with a strict Milk Diet, the preceding two Months; Others, a Regimen of Mercurial Alteratives, with gentle Purges at proper Intervals, for the same length of time; but, I think, those of the greatest eminence in *London* seldom prescribe Bleeding more than once, and

and frequently not at all, trusting to an abstemious course of Life, and two or three gentle Purges the Week before the Operation, at least, where the Subject is young.

THE proper time for Inoculation is generally suppos'd to be Infancy, and some think the earlier the better; but as Children, the first two or three Years of their Life, are subject to many terrible Disorders from the Circumstance of breeding their Teeth, and indeed seem more liable to fatal Convulsions upon the Eruption of the Small-Pox, than after that time, I believe it is adviseable to postpone the Operation 'till they are three or four Years old, when probably the longer it is deferr'd, so much the worse, though the Success of this Practice has been surprizing even in the most advanced Age.

PHYSICIANS have not unanimously determin'd which is the preferable Part for Inoculation, the Arms or Legs, and some order the Operation to be perform'd in one of each: In either case it is right to do it in two places, though probably it will not be absolutely necessary; but as one of the Applications may by accident fall off or slip on one side from the Orifice, the other will generally take effect, and prevent a Disappointment. The Practice of Inoculating in the Legs is preferr'd to the other Method by
some,

some, from an Observation that the Incisions in these Parts are more disposed to ulcerate and yield a great Discharge, than those in the Arms, which Circumstance they imagine to be advantageous, upon a Persuasion it makes a powerful Revulsion of the morbid Matter from the Face and Throat: On the contrary, the Advocates for Inoculating in the Arms advise it for the very Reason, that the Orifices are less liable to become sore and painful; alledging, that the Discharge from the Wounds cannot be favourable to the Eruption, since it seldom happens 'till the Pustules appear, and are even ripe; or should it be judged necessary from the nature of the Distemper, or the Patient's Constitution, to continue the Discharge, still it may be done as efficaciously in the Arms by converting one or both Incisions into an Issue. These Considerations have induced the generality of Physicians to approve of this last Method.

THE Operation is to be performed after this manner. You must with a Lancet open five or six large Pustules on the Arm or Leg of the Subject you inoculate from, when they are plumpest, and the Distemper is at its height; then taking the Matter from each of them on the Point of the Lancet, you are to wipe it off on two pieces of Lint roll'd up in the
shape

shape and of the size of a Barley-corn, which will be wet enough with this quantity. The pieces of Lint should be immediately put into a little Box or Bottle and shut up close, and though perhaps the Matter may retain its Efficacy for many Hours or Days, yet it is advisable to use it as soon as possible. It would be of no Importance what part of the Arms or Legs were to receive the Infection, but that a Drain may be desirable after the Illness, and therefore the Incisions should be in those Places where Issues are generally order'd, that by putting in a Pea, you may at Pleasure procure a Discharge from them as long as you shall think proper, a Month, two Months, or more: The Orifices should be cut with a Lancet the length of a Barley-corn, and so shallow as barely to fetch Blood; the pieces of Lint must be laid exactly on them, and secur'd in their situation by a sticking Plaister and Bandage; this Application should remain Twenty-four or Thirty-six Hours, and afterwards the Orifices may be treated every Day with Digestives or other Medicines according to their degree of Inflammation, Ulceration and Pain. After the Operation the Patient must be confin'd, and live low 'till the time of the Eruption, which is usually about the ninth Day, when the Dis-
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temper is to be managed as in the ordinary Method.

It is imagined by some, that the Matter from an Inoculated Subject is less malignant than from a Person who has the Distemper, however mildly, in a natural way; but, I think, there is not a sufficient Foundation for this Opinion: It is without doubt proper to take it from a kind sort of a healthy Subject, and though it is not probable any other Constitutional Illness will be communicated with the Small-Pox by Inoculation, rather than by the natural way, which no body even suggests, yet as we may have choice of Patients to borrow it from, we should not run any risk, but fix on such if possible, who are under nine or ten Years of Age, and whose Parents have always been healthy as well as themselves.

It may not be amiss to observe, that upon the Introduction of the Practice of Inoculation into *England*, amongst the many popular Prejudices which prevail'd against it, there was none of such seeming weight, as the Opinion that it did not absolutely secure the Patient from contracting the Distemper again in the natural way; but length of Years, and a strict Enquiry, have at last intirely falsified this Doctrine amongst Men of Learning and Candour.

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